



The MMST System Information Bulletin

November 1998



In this issue of the "*Bulletin*," the Research Planning, Inc. (RPI), Metropolitan Medical Strike Team (MMST) Support Team provides additional information regarding the availability of training at **The Department of Justice (DOJ), Center for Domestic Preparedness**, located at Fort McClellan, AL.

For your use we have also included information on developments in the areas of equipment and specialized pharmaceuticals, conferences, and general topics of relevance to your MMST System Development and planning efforts. We hope you find the following information useful.

DOMESTIC PREPAREDNESS UPDATE

Training

* Due to circumstances beyond their control, the **DOJ Center for Domestic Preparedness** has found it necessary to revise the course schedule for courses originally scheduled to begin in calendar year 1999. The RPI Team had hoped to have a revised schedule to include with this edition of the Bulletin. According to the Centers' Training Director, Mr. Bob Baker, the class schedule is confirmed for January 1999.

Regarding training beyond January, the Center has continued to experience difficulties in confirming training site availability for classes beyond January, therefore a long-range training/class schedule is unavailable at present.

To arrange for attendance at a course offered at the Center, contact your State-level Emergency Management Agency, Training Office/Officer.

For additional information regarding course scheduling and availability for the remainder of calendar year 1998 and January 1999, please contact:

The Center for Domestic Preparedness
Mr. Bob Baker, Training Director,
at (256) 848-4139.

Operations

* The city of Jacksonville, FL, like many of the MMST System development cities, was recently required to "shift gears" and transition from a training mode under Domestic Preparedness, to an operational mode in early November.

Courtesy of the Jacksonville Office of Emergency Preparedness, the RPI Team provides the following for your information:

DOMESTIC PREPAREDNESS UPDATE

Ricin Incident, Jacksonville, FL

On the morning of November 3, 1998, at 8:16 a.m., the Fire Communications center for the Jacksonville Fire and Rescue Department (JFRD), received a phone call from Police Communications in the Police Memorial Building. The caller stated that the police needed hazardous materials (HAZMAT) assistance with a substance he referred to as "ricin." The dispatcher in Fire Communications called to alert the chief of the HAZMAT Team that he needed to prepare for dispatch to the Police Memorial Building. As they were speaking on the phone, the police dispatcher called back to give the spelling of "ricin."

The events during the remainder of the morning were a definite test of the Jacksonville response system's ability to handle a biological terrorism event. Within minutes, the Emergency Operations Center (EOC) was activated. The University Medical Center (UMC) (Trauma Center) was notified of the situation and told by the JFRD Chief of Rescue to implement lockdown procedures of the emergency room (ER). An estimate of five patients who had been directly exposed to the powdered substance would be evacuated there once they had been decontaminated on scene. Other county hospitals were put on "alert standby" status. Eventually, a total of nine personnel, one of whom had symptoms of vomiting and nausea, were rushed to the UMC, where they were again decontaminated, and then admitted for observation. The Florida Poison Control Center quickly and efficiently disseminated a 2-page fact sheet on ricin, which gave all the essential information needed concerning toxicity, types of exposure, signs and symptoms of exposure, decontamination, etc.

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The Federal Bureau of Investigation (FBI) was notified, since the only known use for ricin is in conjunction with criminal or terrorist activity. Through conversations with the FBI terrorism unit in Washington, DC, the on-scene FBI agent determined that the substance probably was not ricin, since, after several hours post-exposure, the “patients” had not displayed any symptoms. (The one individual with nausea and vomiting was adjudged to have been suffering psychosomatic symptoms induced by the high anxiety level associated with the belief that she had come into contact with a deadly biological toxin.)

As the investigation continued, it appeared that the incident began early that morning when police seized a double plastic bagged quantity of white powder from an unoccupied apartment believed to be a drug hangout. All local law enforcement agencies had previously received a bulletin from the Border Patrol, which informed them of threats by drug dealers to adulterate their products with ricin in order to intimidate police and possibly inflict them with the deadly toxin. As the police officer was performing a routine field lab test, he observed a reaction which led him to believe, based on the information in the bulletin issued by the Border Patrol, that the product could be ricin. Subsequent tests of the substance, performed by the Florida Department of Environmental Protection, indicated that the substance was inorganic, with traces of ammonia and chloride. It was later concluded to most likely be a cleaning solvent. Jacksonville was thankful that this was a “false scare,” and not the real thing. Nevertheless, it certainly provided a learning opportunity for all involved in the local emergency response system. Several agencies and departments conducted critiques the next day to capitalize on “lessons learned” and to further refine their internal procedures.

End of Summary

The RPI Team extends its thanks to the Jacksonville Office of Emergency Preparedness Director, Chip Patterson, and Senior Emergency Planner, Carolyn Abell, for providing this summary of their incident.

DOMESTIC PREPAREDNESS UPDATE

For additional information regarding the Jacksonville systems’ response to this incident, please contact:

The Jacksonville Office of Emergency Preparedness
Mr. Chip Patterson , Director,
or
Ms. Carolyn Abell, Senior Emergency Planner,
at (904) 630-2472.

The sharing of information regarding training and/or exercises, operations, and of “lessons learned,” with other MMST System Development cities is a vital part of the learning process. We invite your support of this column, as an excellent means of “Sharing the Knowledge.”

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* The U.S. Army, Edgewood Research Development Engineering Center (ERDEC) at Aberdeen Proving Grounds/Edgewood Arsenal has undergone a name change. They are now called the U.S. Army, Edgewood Biological and Chemical Center (ECBC). Regardless of the name change, the Center has published its’ “Test Results of Level ‘A’ Suits to Challenge By Chemical and Biological Warfare Agents and Simulants: Summary Report,” dated June 1998.

At 186 pages, the report opens by providing the background information explaining the need and rationale for such testing, and goes on to detail the test protocols that were used. Graphs and charts are used extensively to explain and identify the test results.

Included early in the report is the identification by suit name, model number, and manufacturer of the Level ‘A’ suits, which were selected for the test process. In total, there were 12 separate suits or ensembles, from 6 separate manufacturers, selected for the testing.

Of the 12 suits selected for testing, 8 suits are designated as “Limited-Use,” and 4 suits are designated as “Reusable,” or multi-use suits. Manufacturers and/or vendors of the suits selected

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for testing, were Kappler, Lakeland, Mar-Mac, ILC-Dover, Mine Safety Appliances (MSA), and Trelborg Viking.

According to MSA representative Evan Erickson, MSA is strongly considering divesting themselves of their line of Chemical Suits/Garments, and focusing on the other products traditionally associated with MSA.

For additional information regarding this round of testing, or to obtain a copy of this report, please refer to the SBCCOM/ECBE Internet site at www.cbdcom.apgea.army.mil/ops/dp/dp_levela_executive_report.pdf.

Or contact:

The Edgewood Chemical and Biological Command Engineering Directorate, Mr. Richard D. Belmonte, at (410) 436-5608.

* Of interest to all is the continued availability of the "Domestic Preparedness, Compendium of Weapons of Mass Destruction Courses, Sponsored by the Federal Government" that were originally available through the Domestic Preparedness help-line at Aberdeen Proving Ground, or via the Internet at www.cbdcom.apgea.army.mil/ops/dp/compendiumfinal.pdf.

Both of these documents are available via the Tempest Publishing Internet site at www.chembio.com

* Courtesy of Dr. Frannie Winslow, the city of San Jose, Emergency Preparedness Director, the RPI Team is able to share with all, the following.

The American Psychological Association, in its official periodical *The APA Monitor* published an article entitled "**Learning how to calm public panic in the event of a chemical attack.**"

Appearing in the June 1998 edition of the *APA Monitor*, the article, written by staff writer Steve Sleek, provides some useful insights into the psychological impact a WMD/NBC event may have, and how it may differ from the psychological effects of a natural disaster.

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The article goes on to identify the various efforts currently under way to build and enhance the mental health care "slice," of a "systems response" to a WMD event. Also provided are some suggestions on planning considerations such as where and how to conduct decontamination operations at a hospital. The writer asserts that traditionally, many hospitals have designated an autopsy room as their primary decontamination room. While this approach is technically practical, the writer makes a good point by asking what might be the psychological consequences experienced by someone forced to enter such a facility under the stress and circumstances of the moment?

The article may provide some useful tips as you continue your planning efforts. For your use, we have included a copy of the article, as well as the American Psychological Associations' Internet address, with the other featured Internet Web addresses, located at the end of the bulletin.

The RPI Team is again grateful to Dr. Winslow for bringing this article to our attention and for "Sharing the Knowledge."

EQUIPMENT INFORMATION

The RPI Team continues to expand and strengthen its association with equipment manufacturers and vendors. Various companies offering equipment or services that may be useful to MMST System Development or in an MMST System response, have contacted us. In our effort to continue "Sharing the Knowledge," it is our pleasure to pass this information on to our MMST System Development cities.

In this section we have provided a synopsis of the information we have received, along with contact information, i.e., vendor/manufacturer point of contact, telephone numbers, and where applicable, electronic mail (E-mail) or web addresses. You may also find attached (where indicated) copies of the data sheets we have received on the products or services offered.

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We are distributing this information to assist you in your MMST System Development and Equipment Identification process; however, the RPI Team reminds all recipients of this bulletin that no recommendations or endorsements are made or implied.

Personal Protective Equipment (PPE)

The RPI Team has received product information from three domestic manufacturers of HAZMAT/Chemical Protective Overgarments, regarding their respective Level 'A', and Level 'B' garments that may be appropriate for wear in a weapons of mass destruction (WMD)/nuclear, biological, or chemical (NBC) response event. We have included copies of the test data that was made available to us, indicating the permeation resistance against chemical warfare agents for the materials that the garments are constructed of, and/or the finished garment.

The focus of this section of the column is "Limited Use" garments. While one or more of the manufacturers featured may offer reusable garments, all of the garments featured are designated as "Limited Use" garments, indicating the intent to dispose of the garments if they become contaminated, rather than reused. For your use, we have also included guidance from one of the garment manufacturers regarding the decontamination and reuse of garments designated as "Limited Use."

Two of the featured manufacturers utilize fabrics from the Du Pont Protective Apparel Fabrics line in the construction of their garments, while the remaining manufacturer uses its own proprietary fabric in the construction of its garments.

Listed alphabetically by manufacturer, the following is provided.

* **Kappler Protective Apparel and Fabrics, Kappler, USA.**

Kappler offers its "**System CPF**" line of garments that include the "**Responder**," "**Responder Plus**," and "**Responder CSM**," Level 'A' garments, which are constructed from a Kappler manufactured and proprietary fabric. The Kappler lineup also includes

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two Level 'A' ensembles that are **National Fire Protection Association (NFPA) 1991 (1994 revision) compliant**. These ensembles are available with either an aluminized PBI/Kevlar, or fiberglass outer cover, over the "Responder" or "Responder Plus" garment.

Kappler has also developed an innovative approach to assist customers in selecting the appropriate garment based on the intended use for the garment. Entitled "Suit Smart, The Software Solution For Protective Apparel," this CD-ROM based selection guide offers assistance in five areas: Suit Selection, Products and Applications, Test data on Kappler fabrics, Technical data on standards, Test Methods, and Physical Properties; and General information about Kappler, along with contact information.

Kappler has also announced the availability of "Chem-Tape 1" and "Chem-Tape 2." Intended for use in lieu of standard duct tape for taping protective apparel, "Chem-Tape 1" is for typical industrial applications, and "Chem-tape 2" is for liquid chemical splash protection.

For additional information on the Kappler products highlighted above, please see the attached information sheets. For additional information regarding the entire line of Kappler products, please contact your local Kappler Distributor or refer to the Kappler Web site on the Internet at www.kappler.com.

Or contact:

Kappler Protective Apparel and Fabrics, Guntersville, AL, at (800) 633-2410,
or
Ms. Kendra Barclay, Kappler Technical Services Representative, at (800) 750-3768.

***Lakeland Industries, Inc.**

Lakeland offers a wide selection of garments manufactured from DuPont proprietary, "TYCHEM 10,000," and "TYCHEM 9400" fabrics. DuPont has test data on file and available regarding the permeation resistance of these two fabrics against chemical warfare agents, with Lakeland choosing not to duplicate the test process.

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Lakeland offers both Level 'A' and Level 'B' garments manufactured from TYCHEM 10,000 fabric, as well as a separate line of Level 'B' garments, manufactured from TYCHEM 9400 fabric.

Lakeland offers a **Level "A" ensemble** that is also **NFPA 1991 (1994 revision) compliant**. Available in **four separate models**, the ensemble offers flexibility regarding a choice of aluminized fiberglass or PBI/Kevlar outer cover, and choice of front or rear entry TYCHEM 10,000 inner garments.

The other Lakeland Level 'A' garments offer similar choices regarding the availability of front and rear entry models, with flat or expanding backs, as well as offering the choice of Viton or Butyl gloves. Other options for the Level 'A' garments include Quick Disconnect Assemblies for the outer gloves, Air Supply Pass-Thru's for use with supplied-air systems from a variety of manufacturers, and a Pressure Test Kit.

The Level 'B' garments are available in a variety of styles including one-piece coveralls with and without hoods; two-piece jacket and bib; aprons and hoods, with and without expanded backs; and a totally encapsulating, rear entry coverall, with either a flat or expanding back, and choice of hood designs.

The garments manufactured from TYCHEM 10,000 fabric are available in a "High-Visibility," lime-yellow color. The garments manufactured from TYCHEM 9400 fabric are available in a "High-Visibility," "school-bus yellow" that, according to DuPont, are the best color choices for responder visibility, regardless of the background coloration or light levels.

For additional information on the Lakeland products highlighted above, please see the attached information sheets. For additional information regarding the entire line of Lakeland products, please contact your local Lakeland distributor, or refer to the Lakeland Web site on the Internet at www.lakeland.com.

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Or contact:

Lakeland Industries, Inc., Corporate Headquarters
Ronkonkoma, NY, at (516) 981-9700,
or
Lakeland Industries, Inc., Decatur, AL, Chemical
Protective Clothing Division,
Mr. Carl Brown, International Sales representative,
at (800) 645-9291.

* Mar-Mac Manufacturing Co, Inc.

Mar-Mac offers a **broad selection of Level 'A' and Level 'B' garments** manufactured from DuPont manufactured and proprietary TYCHEM 10,000, and TYCHEM 9400 fabrics. In a manner similar to that of Lakeland Industries, Mar-Mac has chosen not to duplicate permeation testing due to the availability of this data from DuPont.

In total, Mar-Mac offers **four separate series of Level 'A' or Level 'B' garments** comprised of the "Commander" series that includes the "Commander Brigade" ensemble, and the "Commander 10,000" line, the "Commander 9400" Series, the "Probe" series, and the "Utility" series. The "Commander Brigade" ensemble is **NFPA 1991 (1994 revision) compliant**, offering an aluminized fiberglass outer cover and TYCHEM 10,000 inner suit in a choice of front or rear entry styles.

The "Commander 10,000" and "Commander 9400" series offer a variety of choices for **Level 'A'** garments, with a choice of front or rear entry, with flat or expandable backs, and Butyl or Viton gloves.

The "Probe" series and the "Utility" series offer a **Level 'B'** garment constructed from a choice of TYCHEM fabrics. The "Probe" series offers a choice of front or rear entry, with an expandable back. The "Utility" series offers the choice of front or rear entry with an expandable back, or rear entry with a flat back.

Optional accessories for all of the garments include the addition of supplied-air, AIR Pass Thru's from a variety of manufacturers, quick connect/disconnect glove rings, and Pressure test Kits for the Level 'A' garments.

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For additional information on the Mar-Mac products highlighted above, please see the attached catalog. For additional information regarding the entire line of Mar-Mac products, please contact your local Mar-Mac distributor or refer to the Mar-Mac Web site on the Internet at www.marmac.com.

Or contact:

Mar-Mac Manufacturing Co. Inc.
McBee, SC,
Mr. Cortis Calk, Division Vice President, at
(800) 845-6962.

The RPI Team would like to extend a hearty "Thank You" to Ms. Barclay, Mr. Brown, and Mr. Calk for the expert support and assistance they provided RPI in preparing this edition of the bulletin.

Respiratory Protection

* 3M/Racal, has made available a compendium of its line of respiratory protection equipment entitled "Respiratory Protection for First Responder Personnel."

Identifying those products that 3M considers to be of the most utility to the First Responder community, the compendium lists Self-Contained Breathing Apparatus (SCBA), Powered Air Purifying Respirators (PAPRs), Full-Face and Half-Face Respirators, and Filtering Face Piece Particulate Respirators. Each category of respirators is accompanied by a comprehensive description of the product and is fully illustrated.

Also included in the compendium is an easy to follow "Selection Chart" that identifies the 3M product; provides a brief product description; identifies the appropriate level of protection offered, i.e., Level 'A,' 'B,' or 'C'; and identifies suggested applications for the product, a breakout of the technical specifications for each of the featured products, and an easy to interpret, "Ordering Information" section.

Please see the attached document, and for additional product information, please contact your local 3M/Racal distributor or contact:

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3M Occupational Health and Environmental Safety Division, Fredrick, MD,
Mr. Rory Yancheck, Government Manager, at
(301) 696-1098.

General Products

* MSA has produced a brochure entitled "*Domestic Preparedness Products*," which identifies a selection of negative-pressure, full-face respirators, and chemical agent detection and identification equipment available through MSA.

The brochure features the "Millenium Chemical-Biological Mask" and the "Advantage 1000 CBA-RCA" Gas mask. Both masks are based on the proven face piece design of the MCU-2P protective mask, currently in use with the U.S. Armed Forces. Each mask possess similarities such as a single-lens face plate, a six-point head harness, left or right filter canister mounting, and a standard mechanical speaking diaphragm that may be adapted to use the MSA 'ESP Communications.'" The masks may utilize filter canisters that, while not currently NIOSH-approved for this application, have been successfully tested against G-series nerve agents, VX nerve agents, Vesicant (blister) agents (Mustard and Lewisite), and biological agents. MSA also states that the masks are effective against Hydrogen Cyanide and Oleoresin Capsicum (Pepper spray) Riot Control Agent, although the masks have not been tested or approved by the National Institute of Occupational Safety and Health (NIOSH) for this application.

MSA also announces the availability of the "UC AP2C, Flame Photometry Detector Kit," and the "Chemical Detection kit (CDK)."

The AP2C, is similar in size, weight, and appearance to the Chemical Agent Monitor (CAM); however, it utilizes a different type of detection technology. Using the operating principal of flame photometry, the AP2C detects G-series nerve agent in the parts-per-trillion (ppt) range, and mustard agent in the parts-per billion (ppb) range.

The "CDK" offers simplicity and reliability in chemical agent detection, using proven colormetric

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chemical reaction technology, similar to that of the M256 Detection Kit, currently in use with the U.S. Armed Forces. Using simple diffusion as the method of sampling, the individual detectors may be used as a “standalone” test to sample various points at an event location, or attached to the filter canister via the canister adapter, to sample the atmosphere around the individual responder.

The “CDK” includes a rugged plastic carrying case, four nerve agent detectors, four blister agent detectors, one filter canister adapter, and two carry straps for the carrying case.

Please see the attached document, and for additional product information, please contact your local MSA distributor, or refer to the MSA Web site on the Internet at www.MSAnet.com.

Or contact:

Mine Safety Appliances Co., Safety Products Division, Pittsburgh, PA,
Mr. Evan K. Erickson, Federal Government Sales, at (724) 733-9274.

Pharmaceuticals

Of concern to all, as the planning process and equipment acquisition process continues, is the stockpiling of appropriate quantities of antidotal pharmaceuticals for use in responding to a WMD event involving the use of war agents.

The RPI Team has received information from a pharmaceuticals manufacturer that identifies **Hope Pharmaceuticals** as a possible source of supply for atropine in dry-tablet form, which is readily soluble and injectable for use as a nerve agent antidote.

Dr. Craig Sherman has provided RPI with a breakout of the approximate quantities of tablets required to treat 1,000 symptomatic victims of nerve agent exposure, and a chart offering a comparison of the features and benefits for the different dosage forms of atropine.

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Hope Pharmaceuticals also has available “Sodium Nitrite, Injection” and “Sodium Thiosulfate, Injection” in “larger quantity packaging” than that found in the “Pasadena Cyanide Antidote Kit,” for possible use in building a larger response capability than that offered by the “Pasadena Kit.”

We have attached, for your use and information, copies of the correspondence provided by Hope Pharmaceuticals regarding the dry atropine tablets, and additional product information on the Sodium Nitrite and Sodium Thiosulfate. For additional information regarding the availability and use of these products, please contact:

Hope Pharmaceuticals, Scottsdale, AZ,
Dr. Craig Sherman, M.D., President, at
(602) 607-1970.

Reference Materials

* **Tempest Publishing** announces the availability of their “**First Responder Chem-Bio Handbook, A Practical Manual for First Responders.**”

Published in a spiral-bound, and handy-to-use pocket sized version, the handbook is divided into alphabetized and tabbed sections for quick reference and use.

The sections are Section “A,” which provides information on Scene Assessment/Control, Indicators of a Chem-Bio Attack, and PPE; Section “B” covers Biological Agents; Section “C” covers Chemical Agents; Section “D” covers Decontamination; and Section “E” is a “Reference” section offering information on Chem-Bio Methods of Delivery, Identification of Dual-Use and Precursor Chemical, and information on the Simple Triage and Rapid Treatment/Transport (START) triage system.

Overall, the “**First Responder Chem-Bio Handbook, A Practical Manual for First Responders,**” appears to be fairly comprehensive in scope.

Tempest Publishing also has an Internet Web site that is maintained as the “Tempest National Security Chem-Bio Line,” which offers links to other sites of interest.

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The site offers a resource center that appears to be updated regularly to include past and current General Accounting Office (GAO) Reports regarding the Domestic Preparedness Program, as well as reports by the Chemical and Biological Defense Command (CBDCOM)/(U.S. Army) Soldier and Biological Chemical Command (SBCCOM) on their ongoing DP efforts such as the Level 'A' Suit testing initiative. Also available via this site is the "Domestic Preparedness, Compendium of Weapons of Mass Destruction Courses, Sponsored by the Federal Government" that was originally available through the Domestic Preparedness help-line at Aberdeen Proving Ground.

For additional information on how to obtain a copy of the **handbook**, or to view the full line of products and services offered by **Tempest Publishing**, please refer to their Internet site at www.chem-bio.com.

Or contact:

Tempest Publishing, Alexandria, VA,
Mr. Ben Venzke, at (703) 370-2962.

WEB SITES OF INTEREST

The American Psychological Association

<http://www.apa.org>

The Tempest Publishing, Tempest National Security Chem-Bio Line

<http://www.chem-bio.com>

The DuPont Protective Apparel Web Page

<http://www.dupont.com/Tyvek>

Kappler Protective Apparel and Fabrics

<http://www.kappler.com>

Lakeland Industries, Inc.

<http://www.lakeland.com>

Mar-Mac Manufacturing Co, Inc.

<http://www.marmac.com>

LIST OF ATTACHMENTS

Kappler Protective Apparel and Fabrics
Product Information

Lakeland Industries, Inc.
Product Information

Mar-Mac Manufacturing, Inc
Product Information

3M 'Respiratory Protection for First Response Personnel'
Product Information

Mine Safety Appliances, Inc.
Domestic Preparedness Products Information

Hope Pharmaceuticals
Chemical Agent Antidote/Pharmaceuticals
Product Information

American Psychological Association
APA "Monitor" Article,
"Learning how to calm public panic in the event of a chemical attack."

3M™ 6000 and 5000 Series Half Facepiece Respirators

Convenient and response ready



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6000 Series Low Maintenance Respirators

- Comfortable, lightweight facepiece with thermoplastic rubber (TPR) face seal.
- Available in three sizes (small, medium, large).
- NIOSH approved with a variety of cartridges and filters.



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Cartridges for 6000 Half Facepiece Respirators

Product Number	NIOSH Approved For
2091	P100 particulate filter
60921	Organic vapor cartridge with P100 particulate filter
60923	Organic vapor, chlorine, hydrogen chloride and sulfur dioxide or hydrogen sulfide (escape only) or hydrogen fluoride cartridge with P100 particulate filter
60926	Organic vapor, chlorine, hydrogen chloride, chlorine dioxide, sulfur dioxide, hydrogen sulfide (escape only), ammonia/methylamine, or hydrogen fluoride cartridge with P100 particulate filter

5000 Series Maintenance-Free Respirators

- Lightweight facepiece with thermoplastic rubber (TPR) face seal.
- Available in three sizes (small, medium, large).
- NIOSH approved.
- Pre-assembled respirators require no maintenance.



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Product Number	NIOSH Approved For
51916 (S) 52916 (M) 53916 (L)	Organic vapor, chlorine, hydrogen chloride, chlorine dioxide, sulfur dioxide, hydrogen sulfide (escape only), ammonia/methylamine, or hydrogen fluoride cartridge with P100 particulate filter

The full line of product parts and accessories are shown in the "Health and Safety Products for Government Purchasers" literature. See back cover for reference.

Domestic Preparedness

There's danger in our midst.

Our citizens and communities

are at constant risk from

accidental events, acts of

nature and deliberate and

vicious acts of terrorism.

When an event occurs, we

must be prepared to respond

immediately with personnel

who are properly trained

and equipped.

Chemical Stockpile Emergency Preparedness Program (CSEPP)

CSEPP is a federal program that provides emergency plans, procedures and equipment to aid communities that surround United States military chemical weapons stockpiles.

The 3M™ Breathe-Easy™ 7 RRPAS™ Rapid Response Powered Air System and Breathe-Easy™ 10 Butyl Rubber Hood Systems have been tested and are on the authorized equipment purchase list for use by civilian first responders under CSEPP.

Metropolitan Medical Strike Team (MMST)

MMST is a federal initiative establishing medical response teams in US cities to enhance response in the event of an act of terrorism. The 3M™ Breathe Easy™ 7 RRPAS™ and Breathe-Easy™ 10 Butyl Rubber Hood System are in service in many of the cities that have established an MMST.

Domestic Preparedness

The Domestic Preparedness program provides training, expert assistance and equipment to first responders at the local level in order to increase their proficiency in responding to acts of terrorists who use weapons of mass destruction. Applicable products are the 3M™ SCBAG™, Breathe Easy™ 7 RRPAS™, Breathe-Easy™ 10 Butyl Rubber Hood System and Belt-Mounted PAPR System.

Products that are up to the challenge

First responders are the backbone of all these programs. The nature of the task demands that they enter danger zones. Civilian and military agencies must make certain that first responders are properly protected with respiratory equipment as well as protective clothing. This brochure illustrates some of the innovative and dependable products available from 3M for respiratory protection of personnel who are at the forefront of the crisis.

▲ Important

Before using these respirators, you must determine the following:

1. The type of contaminant(s) for which the respirator is being selected.
2. The concentration level of that contaminant.
3. Whether the respirator can be properly fitted on the wearer's face.
All respirator instructions, warnings and use and time limitations must also be read and understood by the wearer before use.

See page 12 in this brochure for WARNINGS and Product Use Limitations.

3M™ SCBAG™ Self Contained Breathing Apparatus

Innovation in a bag

The SCBAG pressure-demand self contained breathing apparatus (SCBA) is unlike any other product in its class. This 30-minute SCBA is stored in a unique carrying bag that opens to form a vest with the SCBA system in place and ready for use. For first response personnel, it's available when and where they need it.

- Highest level of respiratory protection available.
- For use in environments that are Immediately Dangerous to Life and Health (IDLH) such as oxygen deficient atmospheres and those containing chemical and biological agents.
- Available with and without airline connection. Systems purchased without airline connection can be easily upgraded.
- Low pressure gauge is easy to read; alarm is easy to hear in noisy conditions.
- Silicone facepiece has integral speaking diaphragm and nose cup.
- System is lightweight (maximum 22.1 lbs.) with 4500 psi, 30 minute cylinder.
- Vest/bag is made of durable, abrasion resistant fabric for long use.
- Hook and loop fasteners make size adjustment of vest fast and easy.
- NIOSH approved.



3M™ Escort™ Self Contained Breathing Apparatus

High level escape/supplied air systems

This 3M escape/supplied air respirator system offers the highest level of respiratory protection available for first response in environments where chemical and biological agents, lack of oxygen, or unknown atmospheres present IDLH conditions.

- Pressure-demand self contained breathing apparatus (SCBA)/supplied air system provides the highest level of respiratory protection available in a lightweight system.
- Silicone facepiece material provides comfortable face seal on a variety of facial shapes and sizes.
- Nose cup reduces fog build up.
- Speaking diaphragm assures clear and easy communication.
- Low maintenance piston regulator is single stage with few moving parts.
- NIOSH approved systems with 5 or 15 minute SCBA cylinders.
- Approximate system weight:
 - 5 minute: 10.6 lbs.
 - 15 minute: 14.2 lbs.



3M™ Breathe Easy™ 10 Butyl Rubber Hood System

Comfort plus protection

The 3M butyl rubber hood system reduces weight without compromising protection. The powered air purifying respirator (PAPR) provides protection and mobility ideal for civilian first responders.

- Designed for use with the Breathe Easy powered air purifier.
- Provides continuous flow of filtered air.
- Power unit is belt-mounted for comfort.
- Powered by a rechargeable nicad or disposable lithium battery with up to 8 hours service time.
- Butyl rubber meets military standard MIL-C-51251A for resistance to chemical and biological agents.
- Hood can be worn with most facial hair and glasses.
- System is NIOSH approved with AEP3 (organic vapor/chlorine/hydrogen chloride/sulfur dioxide/HEPA) and AP3 (organic vapor/HEPA) cartridges and filters.
- Tested and authorized for purchase (with AP3 cartridges/filters) under the Chemical Stockpile Emergency Preparedness Program (CSEPP).
- Approximate system weight: 8.0 lbs.



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3M™ Breathe Easy™ 7 RRPAS™ Respirator

Rapid Response Powered Air System (RRPAS)

The RRPAS powered air purifying respirator (PAPR) is especially well-suited for rapid response personnel. This PAPR is stored in a unique carrying bag that transforms into a vest with the PAPR system in place and ready for use.

- For rapid response, this product provides exceptional wearer comfort and full mobility.
- Integrated carrying case/vest is made of durable fabric.
- Highly portable vest-mounted system is easy to put on and take off.
- Vest has belts and pockets for storage and support of gear.
- Hook and loop fasteners make the vest easy to use and adjust to many sizes.
- 3M™ Breathe Easy™ Turbo Unit provides a continuous flow of filtered air.
- Power unit works on either rechargeable nicad or disposable lithium battery with up to 8 hours service time.
- Cartridges and filters available for a variety of response situations.
- NIOSH approved.
- Tested and authorized for purchase (with the AP3 organic vapor/HEPA cartridge/filter) under the Chemical Stockpile Emergency Preparedness Program (CSEPP).
- Approximate system weight: 10.0 lbs.



3M™ Anti-Gas Protective System SGE-400

Riot/crowd control

Rapid and sure response is required in riot situations. To react swiftly and appropriately, police, fire and EMT/EMS personnel must have the right training and be properly equipped and protected.

- This air-purifying respirator has a compact design and is easy to wear.
- Lightweight facepiece is comfortable for extended use.
- Can be used with night vision equipment.
- Six point head harness allows good fit for many face sizes and shapes.
- Canister available to help protect against tear gas (CN and CS).
- C2A1 NBC canister available.
- Approximate weight: 2.0 lbs.



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3M™ Belt-Mounted Powered Air Purifying Respirator

Versatility and performance

The 3M Belt-Mounted Powered Air Purifying Respirator (PAPR) combines versatility with exceptional protection. It provides cartridge and filter options for a wide variety of first response uses.

- The powered air unit provides high airflow.
- The complete power system contours to hip and body for maximum comfort.
- Nicad battery provides up to 8 hours of service per charge.
- The single cartridge system is cost-effective, flexible and easy to change out.
- Vinyl waist belt and optional shoulder strap are durable and easy to decontaminate.
- Available for use with a wide range of 3M™ Hoods, Helmets and Facepieces.
- NIOSH approved.
- Approximate system weight: 7.1 lbs.



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3M™ 7800S and 6000 Series Full Facepiece Respirators

Comfort plus superior protection

7800S Full Facepiece Respirator

- Comfortable silicone facepiece.
- Available in three sizes (small, medium, large).
- Double-flange face seal and six adjustable straps provide a secure fit.
- Facepiece can be adapted for PAPR and supplied air applications.
- Speaking diaphragm allows for improved communication.



Filter/Cartridges for 7800S and 6000 Series Full Facepiece Respirators

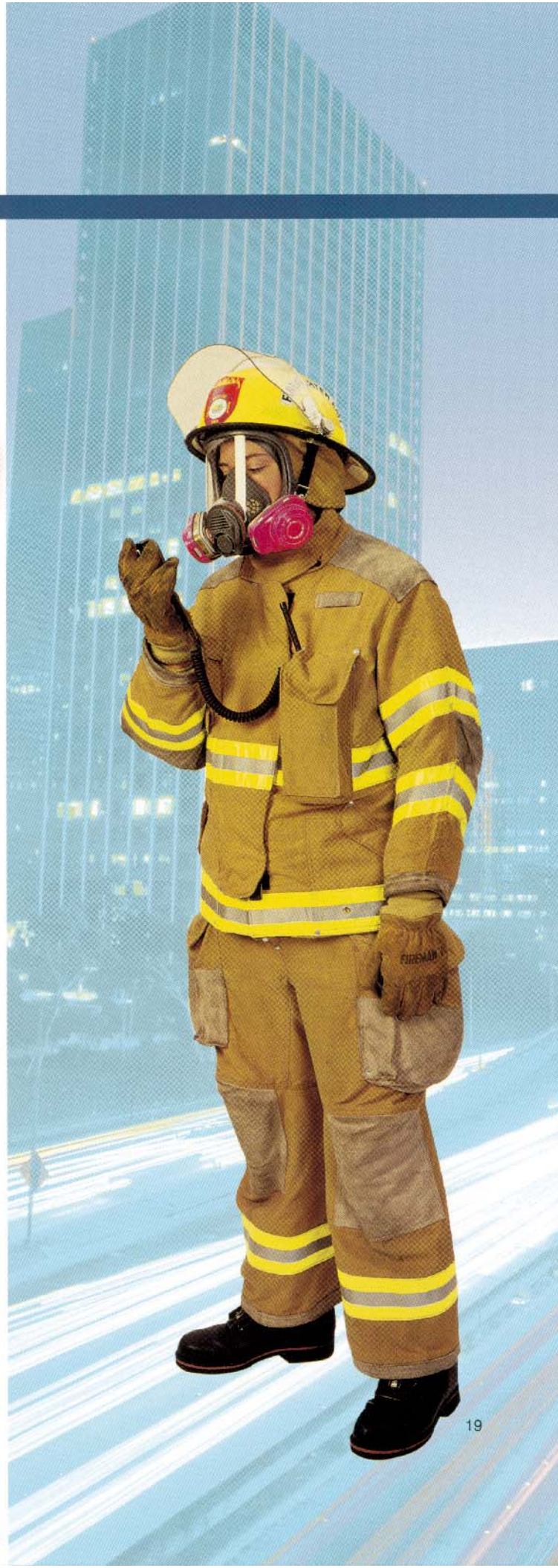
Product Number	NIOSH Approved For
2091	P100 particulate filter
60921	Organic vapor cartridge with P100 particulate filter
60923	Organic vapor, chlorine, hydrogen chloride and sulfur dioxide or hydrogen sulfide (escape only) or hydrogen fluoride cartridge with P100 particulate filter
60926	Organic vapor, chlorine, hydrogen chloride, chlorine dioxide, sulfur dioxide, hydrogen sulfide (escape only), ammonia/methylamine, or hydrogen fluoride cartridge with P100 particulate filter

6000 Series Full Facepiece Respirator

- Comfortable, lightweight facepiece with silicone face seal.
- Available in three sizes (small, medium, large).
- Wide field of vision.



The full line of product parts and accessories are shown in the "Health and Safety Products for Government Purchasers" literature. See back cover for reference.





Respiratory Protection for First Response Personnel








DOMESTIC
PREPAREDNESS

It's only a matter of time.
We must be prepared to respond.

3M *Innovation*

3M™ Filtering Facepiece Particulate Respirators

Ready for emergencies

Product Features	
	8293 P100 particulate respirator. Minimum 99.97% filter efficiency. Features adjustable straps, 3M™ Cool Flow™ Exhalation Valve and face seal. Appropriate for use where HEPA was previously required.
	8233 N100 particulate respirator. Minimum 99.97% filter efficiency. Features adjustable straps, Cool Flow exhalation valve and face seal. Appropriate for use where HEPA was previously required. Not for use in atmospheres containing oil aerosols.
	8576 P95 particulate respirator. Minimum 95% filter efficiency. 3M recommended for relief against nuisance level acid gas.* Features M-noseclip and Cool Flow exhalation valve.
	8577 P95 particulate respirator. Minimum 95% filter efficiency. 3M recommended for relief against nuisance level organic vapor.* Features M-noseclip and Cool Flow exhalation valve.
	8271 P95 particulate respirator. Minimum 95% filter efficiency. Features M-noseclip, Cool Flow exhalation valve, and face seal.
	8511 N95 particulate respirator. Minimum 95% filter efficiency. Features M-noseclip and Cool Flow exhalation valve. Not for use in atmospheres containing oil aerosols.
	8210 N95 particulate respirator. Minimum 95% filter efficiency. Not for use in atmospheres containing oil aerosols.

*Nuisance levels refer to concentrations below the OSHA permissible exposure limit.

The full line of product parts and accessories are shown in the "Health and Safety Products for Government Purchasers" literature. See back cover for reference.

Contact 3M Technical Service at 1-800-243-4630 for more information concerning product recommendations and applications.



Selection Chart for First Response Respirators


3M™ Product	Product Description	Appropriate for Level ¹	Suggested Applications ²
SCBAG SCBA System	Vest mounted, 30 minute, pressure-demand SCBA	A, B	Emergency response in IDLH ³ , oxygen deficient and unknown environments
Escort SCBA System	Pressure-demand airline with 5 or 15 minute escape SCBA	A, B	Emergency response in IDLH ³ , oxygen deficient and unknown environments
Breathe Easy™ 10 Butyl Rubber Hood System	Belt-mounted PAPR with loose fitting butyl rubber hood	C	Response in non-IDLH ⁴ environments, medical evacuation, spill clean-up, decontamination, law enforcement
Breathe Easy™ 7 RRPAS™	Vest-mounted PAPR with tight-fitting full facepiece	C	Response in non-IDLH ⁴ environments, medical evacuation, spill clean-up, decontamination, law enforcement
SGE-400	Negative-pressure, full facepiece air-purifying respirator	C	Riot/crowd control in non-IDLH ⁴ environments
Belt-Mounted PAPR	Belt-mounted PAPR with tight-fitting full facepiece	C	Response in non-IDLH ⁴ environments, medical evacuation, spill clean-up, decontamination, law enforcement
6000/7800S Full Facepieces	Negative-pressure, full facepiece air-purifying respirators	C	Use when concentrations are less than 50X PEL.
5000/6000 Half Facepieces	Negative-pressure, half facepiece air-purifying respirators	C	Use when concentrations are less than 10X PEL.
Filtering Facepiece Particulate Respirators	Negative-pressure, air-purifying respirators	C	Use when concentrations are less than 10X PEL.

¹Level A and B require the highest level of respiratory protection – a positive pressure, full facepiece Self Contained Breathing Apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA, approved by NIOSH. Level C allows that properly selected, air purifying respirators can be worn providing that the concentration(s) and type(s) of airborne substance(s) are known and the criteria for using air purifying respirators is met (atmosphere is NOT IDLH and that the concentration of oxygen is >19.5%).

²Respirators must be properly selected for each concentration and type of airborne substance.

³IDLH-Immediately Dangerous to Life or Health is an atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

⁴Non-IDLH – one which is not IDLH, has concentration of oxygen >19.5% and where the concentration(s) and type(s) of airborne substance(s) are known.



⚠ WARNING

- Before using any of the respiratory products pictured in this brochure, the wearer must read and/or understand all warnings, use limitations and fitting instructions accompanying each product. Failure to do so may result in **sickness or death**.
- Use of 3M™ Respirators by untrained or unqualified persons, or use not in accordance with the instructions, may adversely affect product performance and result in **sickness or death**.
- Each respirator must be properly selected based on the contaminant and concentration levels to which the worker is exposed.
- 3M respirators are to be used only by qualified persons properly trained in their use and maintenance, and only in accordance with their operating and maintenance manuals. Each person using these products must first read and understand the operator's manual.
- The compressed air used with any SCBA, Escape SCBA or supplied air system shall meet at least the requirements for grade D breathing air per Compressed Gas Association Commodity Specification, ANSI/CGA G-7.1-1989, in the United States, and Table 2 of the CSA Standard CAN3-Z180.1-M85, in Canada. The compressor shall be equipped with safety and standby devices per OSHA Standard 1910.134 or CSA Standard CAN3-Z180.1-M85.
- Be sure breathing air couplings are incompatible with outlets for nonrespirable plant air or other gas systems to prevent servicing of airline respirators with nonrespirable air.
- The employer must also have established a satisfactory respirator program such as described in OSHA Standard 1910.134 or CSA Standard Z94.4-93.

Use Limitations

1. Failure to comply with all instructions and warnings on the use of these products and/or failure to wear the respirator during all times of exposure may reduce respirator effectiveness and result in **sickness or death**.
2. Never alter or modify this respirator.
3. Repair or replace respirator parts if they become damaged. Use appropriate 3M parts **only**.
4. DO NOT use Air Purifying Respirators when concentrations of contaminants are unknown or immediately dangerous to life or health (IDLH).
5. Use of the equipment described in this catalog should be in accordance with applicable safety and health standards, respirator selection tables contained in such publications as ANSI Z88.2-1992, or pursuant to the recommendations of an industrial hygienist.
6. If you have any doubts about the applicability of the equipment to your job situation, it is recommended you consult an industrial hygienist or call 3M Occupational Health and Environmental Safety Division, Technical Service Department, 1-800-243-4630.

Technical Specifications

SCBAG

System Components

- Vest/bag
- Facepiece
- Cylinder
- Valve
- Regulator
- Airline connection optional
- Airline hose purchased separately

Cylinder Specification

- Aluminum/fiberglass, hoop wrapped
- Pressure: 4500 psi
- Capacity: 45 cu. ft.
- Length (including valve): 22.8 in.
- Diameter: 5.4 in.
- Weight fully charged: 15.8 lbs.

Supplied Air Operation

- Operating pressure: 110-125 psi
- Hose lengths: 25-300 ft., ½ in. ID hose assembly
(Maximum of 4 lengths connected together)

Facepiece

- Black silicone rubber with polycarbonate lens

Unit Weight As Worn

- System with PBI/Kevlar® vest: 22.1 lbs.
- System with Cordura® Nylon vest: 21.8 lbs.

Escort

System Components

- Silicone rubber facepiece
- Cylinder
- Valve
- Regulator
- Harness
- Airline hose purchased separately

5 minute ESCBA/SAR (360-16-00)

- Duration: 5 minutes
- Approximate system weight: 10.6 lbs.
- Harness material: Nylon
- Cylinder

- Material: Aluminum
- Working pressure: 2216 psi
- Capacity: 8.0 cu. ft.
- Diameter: 4.4 in.
- Length (including valve): 13 in.
- Weight: 5.3 lbs.

15 Minute ESCBA/SAR (360-17-00)

- Duration: 15 minutes
- Approximate system weight: 14.2 lbs.
- Harness material: Nylon
- Cylinder
 - Material: Hoop wrapped aluminum
 - Working pressure: 3000 psi
 - Capacity: 24 cu. ft.
 - Diameter: 5.25 in.
 - Length (including valve): 16.9 in.
 - Weight: 8.9 lbs.

SGE-400

System Components

- Facepiece: silicone
- Visor: polycarbonate
- Cartridge
- Approximate weight: 2.0 lbs.

Breathe Easy™ 10

System Components

- Butyl rubber hood
- Breathing tube and clamps
- Turbo unit
- Belt
- Battery pack
- Airflow indicator
- Cartridges

Specifications

- Airflow: minimum 6 cfm
- Battery pack: nicad battery with up to 8 hours continuous use per charge
- Battery life: approximately 2 years under normal use
- Approximate system weight: 8.0 lbs.

Breathe Easy™ 7

RRPAS™ Rapid Response Powered Air Systems

System Components

- Breath Easy 7 neoprene rubber facepiece
- Breathing tube and clamps
- Vest/bag
- Turbo unit
- Belt
- Battery pack
- Airflow indicator
- Cartridges

Specifications

- Airflow: minimum 6 cfm
- Battery pack: nicad battery with up to 8 hours continuous use per charge
- Battery life: approximately 2 years under normal use
- Approximate system weight: 10.0 lbs.

Belt-Mounted PAPR System (GVP-4)

System Components

- 7800S silicone facepiece
- Breathing tube
- Motor blower
- Power cord
- Battery pack
- Battery charger
- Flow meter
- Blower plugs
- Filter plugs
- Web belt

Specifications

- Airflow: 5-8 cfm
- Battery pack:
 - Initial charge time: 20 hours
 - Service time after 14-16 hours charge: 8 hours
 - Life: up to 500 charge/discharge cycles
- Motor life: approximately 1,000 hours
- Approximate system weight: 7.1 lbs.

Ordering Information

3M Product Number	National Stock Numbers	Product Description	NIOSH Approval Number*
SCBAG			
360-14-01	4240-01-418-2633	SCBAG System, Hoop-wrapped 4500 psi cylinder, PBI/Kevlar Vest	TC-13F-275
360-14-03		SCBAG System, Hoop-wrapped 4500 psi cylinder, Cordura/Nylon Vest	TC-13F-275
360-14-05		SCBAG System, Hoop-wrapped 4500 psi cylinder, PBI/Kevlar Vest with Airline Connection	TC-13F-277
360-14-07		SCBAG System, Hoop-wrapped 4500 psi cylinder, Cordura/Nylon Vest with Airline Connection	TC-13F-277
362-16-81R01		Low Pressure Airline Hose Connection Kit	Component
366-05-00R01	4240-01-417-4166	30 Minute Cylinder, 4500 psi, Aluminum Fiberglass, Hoop-wrapped	Component
Escort System			
360-16-00		Escort, Combination 5 Minute ESCBA/SAR, 2216 Aluminum Cylinder	TC-13F-328
360-17-00		Escort, Combination 15 Minute ESCBA/SAR, 3000 Hoop-wrapped Cylinder	TC-13F-329
360-17-01		Escort, Combination 15 Minute ESCBA/SAR, 3000 Hoop-wrapped Cylinder (with remote gauge and low pressure alarm)	TC-13F-333
366-16-00R01		Cylinder and Valve Assembly, Aluminum, 5-minute, 2216 psi	Component
366-23-00R01		Cylinder and Valve, Hoop-wrapped, 15-minute, 3000 psi	Component
Breathe Easy (BE) 10 Butyl Rubber Hood System			
260-10-21LRA01		Breathe Easy 10 with Butyl Rubber Hood, Lithium Battery and AP3 Organic Vapor/HEPA Cartridge	TC-23C-1885
260-10-21RA01		Breathe Easy 10 with Butyl Rubber Hood, Nicad Battery and AP3 Organic Vapor/HEPA Cartridge	TC-23C-1885
260-10-23LRA01		Breathe Easy 10 with Butyl Rubber Hood, Lithium Battery and AEP3 Organic Vapor/Chlorine/Hydrogen Chloride/Sulfur Dioxide/HEPA Cartridge	TC-23C-1884
260-10-23RA01		Breathe Easy 10 with Butyl Rubber Hood, Nicad Battery and AEP3 Organic Vapor/Chlorine/Hydrogen Chloride/Sulfur Dioxide /HEPA Cartridge	TC-23C-1884
520-04-62	4240-01-450-8402	Breathe Easy 10 Butyl Rubber Hood, with Breathing Tube Assembly	Component
Breathe Easy (BE) 7 RRPAS			
260-09-01RA01	4240-01-447-2829	RRPAS System w/Breathe Easy 7 Facepiece, Nicad Battery and AP3 Organic Vapor/HEPA Cartridge	TC-23C-483
260-09-14RA01	4240-01-447-2834	RRPAS System w/Breathe Easy 7 Facepiece, Lithium Battery and AP3 Organic Vapor/HEPA Cartridge	TC-23C-483
520-01-99	4240-01-312-2770	Breathe Easy 7 Headpiece Pack (Full Facepiece w/Breathing Tube)	Component
361-35-00R01	4240-01-447-2750	Bag/Vest Cordura Nylon, Black	Component
Breathe Easy (BE) Cartridges and Filters			
			With BE 10
			With BE 7
453-03-01R06	4240-01-323-3530	Type AEP3 Organic Vapor/Chlorine/Hydrogen Chloride/Sulfur Dioxide/HEPA Cartridge (Pk/6)	TC-23C-1884
453-00-01R06	4240-01-308-5734	Type AP3 Organic Vapor/HEPA Cartridge (Pk/6)	TC-23C-1885
453-07-01R06		Type ALP3 Organic Vapor/Hydrogen Fluoride/Sulfur Dioxide/HEPA Cartridge (Pk/6)	TC-23C-1207
453-01-01R06	4240-01-309-5735	Type EP3 Sulfur Dioxide/Chlorine/Formaldehyde/Hydrogen Chloride/HEPA Cartridge (Pk/6)	TC-23C-598
456-00-07R06	4240-01-308-5730	Type A Organic Vapor Canister (Pk/6)	TC-14G-122
456-00-01R06	4240-01-310-8870	Type A Organic Vapor Cartridge (Pk/6)	TC-23C-535
456-03-01R06	4240-01-308-5733	Type AE Organic Vapor/Chlorine/Hydrogen Chloride/Sulfur Dioxide Cartridge (Pk/6)	TC-23C-606
456-02-07R06	4240-01-309-2316	Type E Chlorine/Hydrogen Chloride/Sulfur Dioxide/Formaldehyde Canister (Pk/6)	TC-14G-133
456-02-01R06	4240-01-310-8871	Type E Chlorine/Hydrogen Chloride/Sulfur Dioxide/Formaldehyde Cartridge (Pk/6)	TC-23C-594
456-01-07R06	4240-01-308-8864	Type K Ammonia/Methylamine Canister (Pk/6)	TC-14G-132
456-01-01R06	4240-01-310-8872	Type K Ammonia/Methylamine Cartridge (Pk/6)	TC-23C-590
453-02-01R06	4240-01-310-8873	Type KP3 Ammonia/Methylamine/HEPA Cartridge (Pk/6)	TC-23C-646
450-00-01R12		Type P3 HEPA Filter (Pk/12)	TC-21C-324
SGE-400			
242-01-07		SGE-400 Anti-Gas Protective System (includes facepiece and one CP3N filter)	See cartridges
450-02-07R06		CP3N Canister for SGE-400 (Pk/6)	late 1998
460-01-06	4240-01-361-1319	C2A1 NBC Canister for SGE-400	Military canister
522-01-74R01		Full Facepiece for SGE-400 (less filter), Silicone	Component
3M Belt-Mounted PAPR			
GVP-4 (S, M or L)		Belt-Mounted PAPR System w/7800S tight-fitting facepiece; including breathing tube, motor blower, plugs, battery, charger, web belt, power cord and flow meter. Specify small, medium, or large size facepiece.	See cartridges
GVP-1	4240-01-395-9180	Belt-Mounted PAPR assembly; including motor blower, power cord, battery pack, battery charger, flow meter, blower plugs, web belt.	Component
GVP-123	4240-01-397-8714	Breathing Tube for use with GVP-1 and 7800S full facepiece respirators	Component
GVP-114	4240-01-398-1962	Filter Cover (10 pack)	Component
GVP-117	4240-01-398-1518	Vinyl Waist Belt	Component

*NIOSH approval numbers apply to whole systems only. NIOSH approval numbers apply only to system and cartridge or filter listed. Systems used in configurations other than those listed may have separate NIOSH approval numbers; please see product insert.

Ordering Information cont'd

3M Product Number	National Stock Numbers	Product Description	NIOSH Approval Number*		
3M Belt-Mounted PAPR cont'd					
GVP-401	4240-01-394-6331	Organic Vapor Cartridge (case of 6)	TC-23C-1453		
GVP-402	4240-01-394-6334	Acid Gas (Chlorine/Chlorine Dioxide/Hydrogen Chloride/Sulfur Dioxide/Hydrogen Fluoride) Cartridge (case of 6)	TC-23C-1458		
GVP-403	4240-01-394-6333	Organic Vapor/Acid Gas (Chlorine/Chlorine Dioxide/Hydrogen Chloride/Sulfur Dioxide/Hydrogen Fluoride) Cartridge (case of 6)	TC-23C-1463		
GVP-404		Ammonia Cartridge (case of 6)	TC-23C-1670		
GVP-405		Formaldehyde Cartridge (case of 6)	TC-23C-1693		
GVP-440	4240-01-394-6337	HEPA Filter (case of 8)	TC-21C-667		
GVP-441	4240-01-394-6338	Organic Vapor/HEPA Cartridge (case of 6)	TC-23C-1468		
GVP-442	4240-01-394-6335	Acid Gas (Chlorine/Chlorine Dioxide/Hydrogen Chloride/Sulfur Dioxide/Hydrogen Fluoride) / HEPA Cartridge (case of 6)	TC-23C-1473		
GVP-443	4240-01-394-6336	Organic Vapor/Acid Gas (Chlorine/Chlorine Dioxide/Hydrogen Chloride/Sulfur Dioxide/Hydrogen Fluoride)/ HEPA Cartridge (case of 6)	TC-23C-1478		
GVP-444		Ammonia/HEPA Cartridge (case of 6)	TC-23C-1675		
GVP-445		Formaldehyde/HEPA Cartridge (case of 6)	TC-23C-1698		
Batteries and Chargers for PAPR Systems					
520-03-73	4240-01-418-5086	Battery Charger, "Smart Charger", Single Unit for Breathe Easy Systems only	Component		
520-03-72	4240-01-418-2569	Battery Charger, "Smart Charger", 5 Unit for Breathe Easy Systems only	Component		
520-01-15R01		Nicad Rechargeable Battery Pack for Breathe Easy Systems only, for type AP3, AEP3, ALP3, KP3, EP3 cartridges only	Component		
520-01-17R01		Nicad Rechargeable Battery Pack for Breathe Easy Systems only, for type A, E, K, AE, P3 cartridges only	Component		
520-04-57R01		Lithium Disposable Battery Pack for Breathe Easy Systems only	Component		
GVP-112	4240-01-398-0221	Battery Charger for 3M Belt-Mounted PAPR only	Component		
GVP-111	4240-01-398-0218	Battery Pack, Rechargeable, for 3M Belt-Mounted PAPR only	Component		
6000 and 7000 Series Facepieces					
7800S Sm	4240-01-314-2780	7800S Full Facepiece – Silicone, (Small)	See cartridges		
7800S M	4240-01-342-5239	7800S Full Facepiece – Silicone, (Medium)	See cartridges		
7800S L	4240-01-301-3200	7800S Full Facepiece – Silicone, (Large)	See cartridges		
6700	4240-01-454-8531	6000 Series Full Facepiece, (Small)	See cartridges		
6800	4240-01-454-8535	6000 Series Full Facepiece, (Medium)	See cartridges		
6900	4240-01-454-8538	6000 Series Full Facepiece, (Large)	See cartridges		
6100	4240-01-342-2852	6000 Series Half Facepiece, (Small)	See cartridges		
6200	4240-01-342-2853	6000 Series Half Facepiece, (Medium)	See cartridges		
6300	4240-01-342-2854	6000 Series Half Facepiece, (Large)	See cartridges		
Cartridges and Filters for 6000 and 7000 Air Purifying, Negative Pressure Facepieces					
			With 6000 Half Facepiece	With 6000 Full Facepiece	With 7000 Half Facepiece
2091	4240-01-320-1954	P100 particulate filter	TC-84A-0022	TC-84A-0683	TC-84A-0038
60921	4240-01-455-7353	Organic vapor cartridge with P100 particulate filter	TC-84A-0191	TC-84A-0699	TC-84A-0205
60923	4240-01-455-7360	Organic vapor, chlorine, hydrogen chloride, sulfur dioxide, or chlorine dioxide and hydrogen sulfide (escape only) cartridge with P100 particulate filter	TC-84A-0193	TC-84A-0701	TC-84A-0207
60926	4240-01-455-7370	Organic vapor, chlorine, chlorine dioxide, hydrogen chloride, sulfur dioxide, hydrogen sulfide (escape only), ammonia/methylamine, formaldehyde or hydrogen fluoride cartridge with P100 particulate filter	TC-84A-0510	TC-84A-0704	TC-84A-0537
5000 Series Maintenance Free Respirators					
51916		Organic vapor, chlorine, hydrogen chloride, chlorine dioxide, sulfur dioxide, hydrogen sulfide (escape only), ammonia/methylamine, or hydrogen fluoride cartridge with P100 particulate filter, small	TC-84A-0544		
52916		Organic vapor, chlorine, hydrogen chloride, chlorine dioxide, sulfur dioxide, hydrogen sulfide (escape only), ammonia/methylamine, or hydrogen fluoride cartridge with P100 particulate filter, medium	TC-84A-0544		
53916		Organic vapor, chlorine, hydrogen chloride, chlorine dioxide, sulfur dioxide, hydrogen sulfide (escape only), ammonia/methylamine, or hydrogen fluoride cartridge with P100 particulate filter, large	TC-84A-0544		
Filtering Facepiece Particulate Respirators					
8293		8293 P100 Particulate Respirator	TC-84A-2561		
8233	4240-01-452-8348	8233 N100 Particulate Respirator	TC-84A-1298		
8576	4240-01-246-5394	8576 P95 Particulate Respirator with nuisance level acid gas relief	TC-84A-1166		
8577	4240-01-452-8331	8577 P95 Particulate Respirator with nuisance level organic vapor relief	TC-84A-1166		
8271	4240-01-247-5686	8271 P95 Particulate Respirator	TC-84A-1166		
8511	4240-01-247-2348	8511 N95 Particulate Respirator	TC-84A-1299		
8210	4240-01-429-2685	8210 N95 Particulate Respirator	TC-84A-0007		

*NIOSH approval numbers apply to whole systems only. NIOSH approval numbers apply only to system and cartridge or filter listed. Systems used in configurations other than those listed may have separate NIOSH approval numbers; please see product insert.

Other 3M™ Products



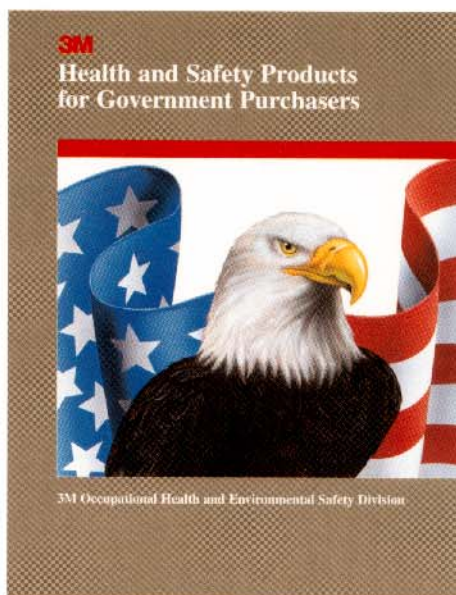
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A complete line of 3M™ Sorbent Products is available to all First Responders. Petroleum, maintenance and chemical sorbents are designed to fit a broad range of applications. Also available from 3M are the unique Folded Sorbents, one product that is a pillow, pad, roll or boom in the same box.

For more information

In United States, contact:

Technical Assistance
1-800-243-4630
Sales Assistance
1-800-896-4223
Fax-on-Demand
1-800-646-1655
Internet
www.3M.com/occsafety
E-mail
occsafety@mmm.com
Material Safety Data Sheets (MSDS)
1-651-737-7222



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All 3M™ OH&ESD Respiratory Protection Products are found in one brochure designed for the government health and safety product purchasers. These products are available through local distribution as well as government procurement systems.

In Canada, contact:

1-800-265-1840, ext. 6137
Internet
www.3M.com/intl/CA/ohes.html
E-mail
dmlee@mmm.com



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3M™ Personal Monitoring Systems are designed with the need to do accurate sampling in the workplace in mind. Simply clip them on during a work shift and send them for analysis at the end of the shift.

For other 3M products:

1-800-3M-HELPS
or 1-651-737-6501



Occupational Health and Environmental Safety Division

3M Center, Building 275-6W-01
P.O. Box 33275
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Learning how to calm public panic in the event of a chemical attack

Psychologists are helping emergency crews prepare for a nightmare— a terrorist attack involving biological or chemical weapons.

By Scott Sleek
Monitor staff

After a terrorist released nerve gas into a Tokyo subway system in 1995, 5,000 people overwhelmed emergency rooms seeking treatment, but not many of them actually were medically harmed by the attack. Most were suffering severe anxiety or other psychological reactions. Many mistakingly believed they were exposed.

The Tokyo incident demonstrated the acute need for psychological services in the aftermath of terrorists' use of biological or chemical agents. The Cold War specter of global nuclear war has been replaced by the threat of an anthrax bomb dropped in the middle of an airport or train station or radioactive dust released into a subway system. Unlike natural disasters, these weapons are ominously invisible and strike without warning. They can send people into a unique, confused panic once they learn of their exposure.

'Evidence that the tornado or hurricane has come and gone is pretty unambiguous,' says Paul Ofman, PhD, an expert in disaster mental health services and assistant to the director at the U.S. Department of Veterans Affairs Medical Center in New York City. 'But when it's something that contaminates the air you breathe, where people don't really know what's going on, there's much more distress. What is it? Where did it happen? When will it end? What are the long-term effects? All those questions raise the risk for panic.'

Ofman and other psychologists are in the forefront of an embryonic national effort to prepare for this modern form of terrorism—and the unique emotional pandemonium it can arouse. They're helping disaster relief organizations, such as the Federal Emergency Management Agency (FEMA) and the U.S. Department of Defense, develop appropriate response protocols that include ample mental health services for both victims and rescuers. In fact, psychologists were actively involved in a recent federally sponsored conference, held in Denver, on preparation for disasters involving weapons of mass destruction.

Most importantly, they're helping disaster-response teams learn how to keep public alarm under control, so that rescue efforts can run more smoothly and effectively.

Terrifying possibilities

The federal government and other terrorism watchdogs offer some grim projections about the threat of biological or chemical terrorism. Some envision terrorists releasing the deadly Ebola virus in an airport, dumping radioactive waste in a train station or a chemical weapon released at a national convention.

Fears were heightened earlier this year when FBI agents in Las Vegas arrested two men suspected of possessing anthrax for use as a weapon. Anthrax is simple and inexpensive to produce, and just a minute amount can be fatal.

The psychological tumult that can result from a terrorist attack can hamper medical personnels' efforts to treat people who truly need emergency medical attention, disaster-response experts say. So psychologists and other mental health specialists have begun identifying specific roles they can play in the response to these terrorist attacks, in a way that allows medical personnel to do their job. Those duties include:

- **Diagnostic assistance.** Psychologists can help rescue teams distinguish between people who are actually suffering from the exposure and those who may simply be having a psychosomatic reaction to the incident.

'In a biological attack, for example, rescuers need help determining if someone is having a stress reaction or a reaction to the virus or toxin,' explains Gerard Jacobs, PhD, director of the Disaster Mental Health Institute at the University of South Dakota. 'Sometimes the reactions are very similar and can be very confusing. Some people are categorized as infected when they're just having a panic attack.'

- **Information dissemination.** Psychologists, trained in effective communication skills, can develop the most calming and reassuring ways to keep the public informed about the terrorist event, says Brian W. Flynn, EdD, director of program development, special populations and projects for the Center for Mental Health Services. Often people are more dismayed by what they don't know than they are by bad news, he explains. Information delivered in a timely and sensitive way may prevent them from assuming the worst, he says.

Psychologists say they also are well-trained to disseminate the information in culturally sensitive ways, which can be extremely useful in disasters that occur in ethnically diverse regions.

- **Acute intervention.** Practitioners can provide practical assistance and unobtrusive counseling to victims, their family members and rescue workers at disaster sites and nearby relief centers, says Julian Ford, PhD, deputy executive director of the U.S. Department of Veterans Affairs (VA) National Center for Post-traumatic Stress Disorder. One of their primary objectives is to help people cope with intense, albeit normal stress reactions to the event, to help prevent full-blown psychological disorders, Ford says. Rescue workers and medical personnel also need the help of mental health professionals to calm people experiencing severe agitation, he says.

Psychologists who are experts in disaster response say mental health professionals also need to be involved in preparation efforts, not just the crisis response. Most importantly, psychologists can suggest rescue protocols that can lessen the risk of adverse emotional reactions among patients, says Ofman, who also leads disaster mental health services for the American Red Cross in New York state.

Take, for example, the decontamination process for people externally contaminated with radioactive materials, he says. The decontamination, which often involves rinsing with soap and water, must be done in a nonporous area. Some medical crews often seek to set up decontamination sites in autopsy rooms. From a technical point of view, that might be the best location. But what will the psychological consequences be for the victims?

'Imagine having a person who comes in for decontamination and is wheeled into a room labeled 'autopsy room,' he says. 'And all around him are autopsy instruments and people wearing protective suits. The potential for agitation or panic is very, very great.'

'So you need mental health professionals, who know about trauma and typical responses to traumatic situations, to help set up protocols for managing these situations.'

Psychologists also need to be on hand to provide counseling to the rescue workers, who may also be distressed about the possibility that they've been exposed to the dangerous agent, says Julian Ford, who conducts disaster-response research for the U.S. Department of Veterans Affairs' National Center for Post-Traumatic Stress Disorder.

Practicing for the worst

Psychologists are already involved in preparation efforts. The theme of the National Disaster Medical System's annual conference, held in April in Denver, focused on preparing for weapons of mass destruction. The conference included a full mental health track, organized by Ford and CMHS' Flynn.

'We basically addressed how disaster mental health comes into play in nuclear, biological and chemical warfare and terrorist acts,' says Jacobs, who attended the conference and also is actively involved in APA's Disaster Response Network. 'We were led through scenarios of how these weapons work, and how likely they are to be used here in the United States.'

Meanwhile, federal agencies such as the VA and the Public Health Service, as well as organizations such as the American Red Cross, have been training mental health professionals to respond effectively to man-made disasters.

In April, for example, the VA and the U.S. Department of Defense held a two-day training program at the Fort Gordon Army base in Georgia. The training included a simulated disaster—an explosion that released airborne toxins. It was the first exercise of its type full-scale simulation of a medical and mental health response to a incident involving a weapon of mass destruction, says Ford, who coordinated a mental health leadership training session for the exercise.

Psychologists and other counselors were on hand to help medical personnel manage the participants playing the role of 'psychiatric casualties'—people who were severely traumatized by the accident. They also provided profession and personal consultation to rescue workers who needed help coping with the stress of situation, he says.

'The training went very well, and the simulation was excellent,' Ford says. 'The mental health professionals were very organized and helpful. Medical staff said they were there when needed, constantly available to manage psychiatric casualties—which the medical people are often very frightened of and uncertain how to deal with.'

Mental health services also were a big component of a VA-led radiological-disaster drill held in 1996 at the VA medical center in San Juan, Puerto Rico. Mental health staff worked on planning the scenario and the protocols to be used and provided services to 'victims' and 'response teams,' says Ofman, who served as a faculty member in the drill.

Another big task in preparing for biological and chemical terrorism is getting the general citizenry aware of the threat, so they're better prepared to deal with it, psychologists say. And that's a lofty objective: Most people, including psychologists, don't like to hear about a horrifying danger that at this point remains largely theoretical.

As Flynn put it in a recent speech, the possibility of chemical or biological terrorism forces everyone 'to face our own vulnerabilities, our own limitations, our most primal fears, and break down the denial that allows us to live our daily lives.'

[Cover Page for This Issue](#)

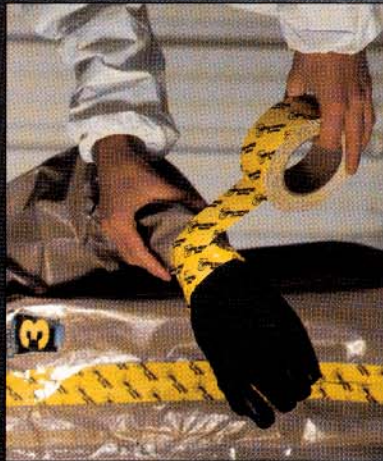
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If you've been using standard duct tape for taping protective apparel, you can now get the assurance of a chemical tested product for added protection. Kappler's innovative new tape is available in two types – *Chem-Tape 1* for typical industrial applications, and *Chem-Tape 2* for liquid chemical splash protection. It's another Kappler exclusive, and another reason to rely on the apparel leader for all of your accessory needs.



Know What You're Getting Into.



ASTM F1001 Chemical Test Battery		
Normalized Breakthrough Time in Minutes ¹		
Chemical	Chem-Tape 1	Chem-Tape 2
Acetone	21	>480
Acetonitrile	>480	>480
Carbon Disulfide	1	>480
Dichloromethane	2	>480
Diethylamine	30	160
Dimethylformamide	>480	>480
Ethyl Acetate	6	>480
n-Hexane	4	>480
Methanol	86	>480
Nitrobenzene	>480	>480
Sodium Hydroxide	>480	>480
Sulfuric Acid	>480	>480
Tetrachloroethylene	2	>480
Tetrahydrofuran	2	>480
Toluene	4	>480

Warfare Agent Testing		
Breakthrough Time in Minutes ²		
Agent	Chem-Tape1	Chem-Tape2
Isopropyl methylfluorophosphonate (Sarin: GB)	NT*	>480
Pinacolyl methylfluorophosphonate (Soman: GD)	NT	>480
O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothiolate (Nerve: VX)	NT	>480
Bis (2-chloroethyl) sulfide (Mustard: HD)	NT	>480

Sources for all test data are independent laboratories. All tests were performed under laboratory conditions and not under actual use conditions.
¹Breakthrough times normalized to a permeation rate of 0.1 ug/cm²/min in accordance with ASTM F739.
²Testing conducted per MIL-STD 282 and US Army Test Operations Procedure (TOP) 8-2-501.

*NT = Not Tested Note: Chem-Tape 2 is U.S. Patent Pending



Chem-Tape 1 - 99401WH, Chem-Tape 2 - 99402YW
 Roll size: 2" (5cm) x 60 yards (54.86 meters), 24 rolls per case

Available Styles for Responder® CSM™

Responder CSM limited-use garments are designed in a wide range of styles to meet the requirements of EPA 29 CFR 1910.120, including:

- **Level A:** Totally encapsulating vapor protective suit, front entry, expanded back for SCBA
- **Level B:** Front entry coverall with optional overhead to protect SCBA

Technical Data For Responder CSM

Chemical Test Data

Chemical Agent	Breakthrough Time* (Minutes)	Breakthrough Criteria
Bis (2-chloroethyl) sulfide (Mustard: HD)	>480	4.0 µg/cm ²
Chlorovinylarsinedichloride (Lewisite: L)	>480	4.0 µg/cm ²
N-dimethylphosphorimidocyanidate (Tabun: GA)	>480	1.25 µg/cm ²
Isopropyl methylfluorophosphonate (Sarin: GB)	>480	1.25 µg/cm ²
Pinacolyl methylfluorophosphonate (Soman: GD)	>480	1.25 µg/cm ²
O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothiolate (Nerve: VX)	>480	1.25 µg/cm ²

* Testing conducted by GEOMET at ambient temperature in accordance with MIL-STD-282. Methods 208/209, with the test cell filled with agent to provide a contamination density consistent with ASTM F-739. Breakthrough criteria is based on cumulative permeation over the total test period.

Typical Physical Properties (measured per ASTM D751-79)

Test Method	Results
Mullen Burst (psi/kPa):	174/1200
Breaking Strength MD: (Grab Tensile lb/N) XD:	92/490 93/414
Trapezoidal Tear MD: (lb/N) XD:	19/84 19/84

MD: Machine Direction XD: Cross Direction

WARNING: Live chemical warfare agent and simulant testing conducted on Responder CSM materials and suits were performed in GEOMET's U.S. Army certified chemical surety laboratory, and in accordance with accepted U.S. Army methods and procedures. However, since the use of this suit is beyond the control of Kappler or GEOMET, it is the responsibility of the user to review this data and the suit design and independently verify that the garment is suitable for the intended use and meets all local regulatory requirements. In no event shall Kappler or GEOMET be liable for any special, incidental, or consequential damages, whether contract or tort, arising from any cause in connection with this Responder CSM product.

CAUTION: Do not use for fire protection. Avoid open flame or intense heat.

NOTE: Consult Responder CSM Technical Manual before use.



For More Information

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GEOMET Technologies, Inc.

20251 Century Boulevard
Germantown, Maryland 20874-1192
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FAX 301-428-9482





When Things Get Ugly, You Can Count On *System CPF*.®

With Kappler's exclusive *System CPF* chemical protective fabrics you have the confidence of knowing that you're covered, no matter how dangerous the job. *System CPF*'s seven levels of protection in a full range of styles and options make it easy to choose the garment you need, from basic chemical splash and clean-up to full-bore, things-can-get-ugly-in-a-second situations. In fact, the uglier the better. Because *System CPF* garments are made to perform beautifully, providing increased physical strength, durability and chemical hold-out over typical fabrics on the market. It's the kind of chemical protection you can count on at every level, no bones about it.



System CPF® – The First Complete Matrix Of Chemical Garments

Only Kappler offers a complete family of fabrics and garments that allows easy selection of the right protection. And with superior physical properties over traditional materials, *System CPF* fabrics perform better in strength and durability tests – eliminating many of the rip-out problems common with other materials.



CPF® 1 Garments provide increased physical strength and splash resistance over competing fabrics by laminating a multi-layer barrier film to a durable polypropylene substrate. *CPF 1* garments should be used in situations where workers need protection from dry particulates and light splash. Available with Serged or Bound seams, color is blue.

Applications: Acid Handling, Tank Cleaning, Mixing Agrichemicals, Oil Refining



CPF® 2 Garments offer greater tear resistance and chemical hold-out by laminating a layer of co-extruded barrier film to a tough 1.5 oz. polypropylene substrate. They can be used against a wide variety of chemicals and where rip-out is a concern. Color is gray. Seams available: Bound or Strapped.

Applications: Chemical Handling, PCB Clean-up, Hazardous Materials/Waste Clean-up, Fire Departments, Industrial Hazmat Teams, Utilities



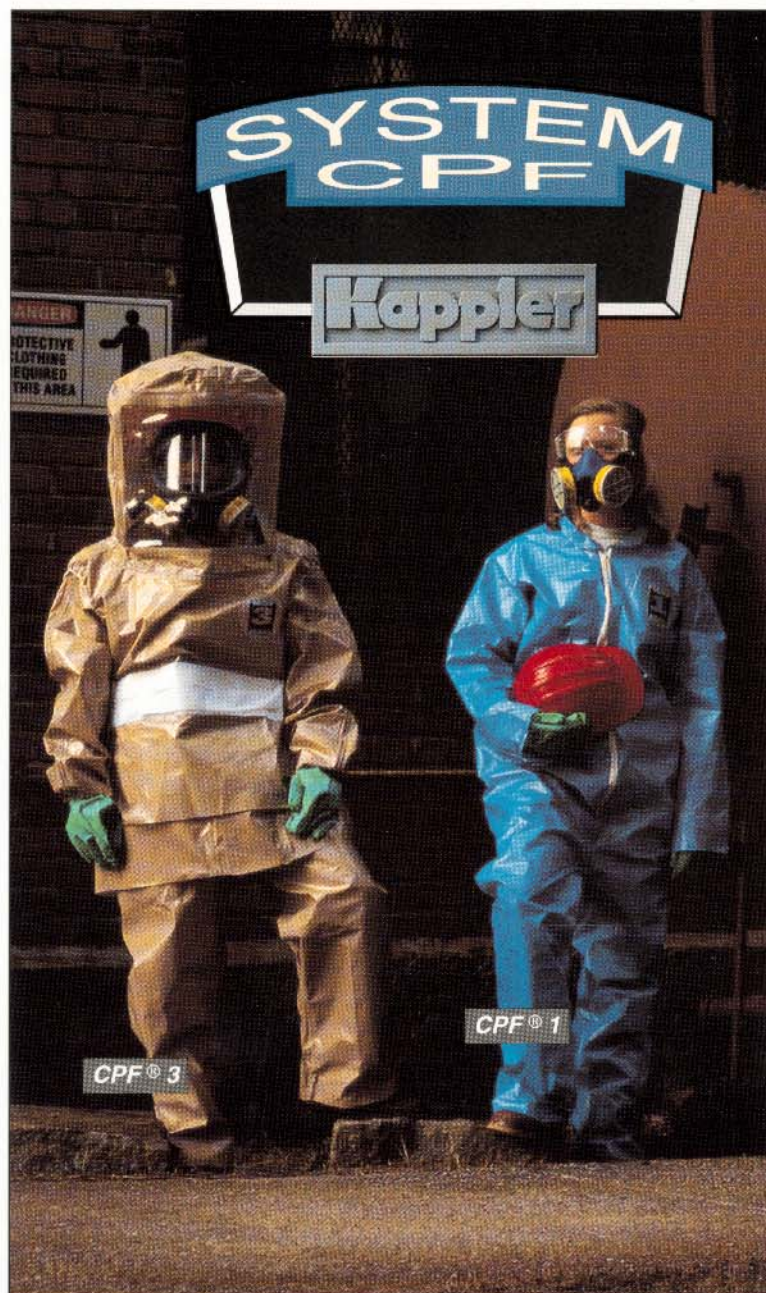
CPF® 3 Garments are constructed from a multi-layer barrier film laminated to a durable 2.0 oz. polypropylene substrate. They offer greater physical strength and chemical hold-out when compared to traditional film products. *CPF 3* garments should be used in rigorous activities and where there is potential for chemical splash. Tan color, Strapped seams.

Applications: Chemical Handling, Petro Chemical Market, Hazardous Materials/Waste Clean-up, Fire Departments, Industrial Hazmat Teams, Utilities



CPF® 4 Garments are constructed of a multi-film composite laminated to a high strength 2.3 oz. polypropylene substrate. They offer chemical protection normally found in suits costing much more. In fact, *CPF 4* provides one of the broadest ranges of chemical protection available for Level B suits, eliminating the need to inventory many kinds of protective garments. Color is green, available in Strapped seams.

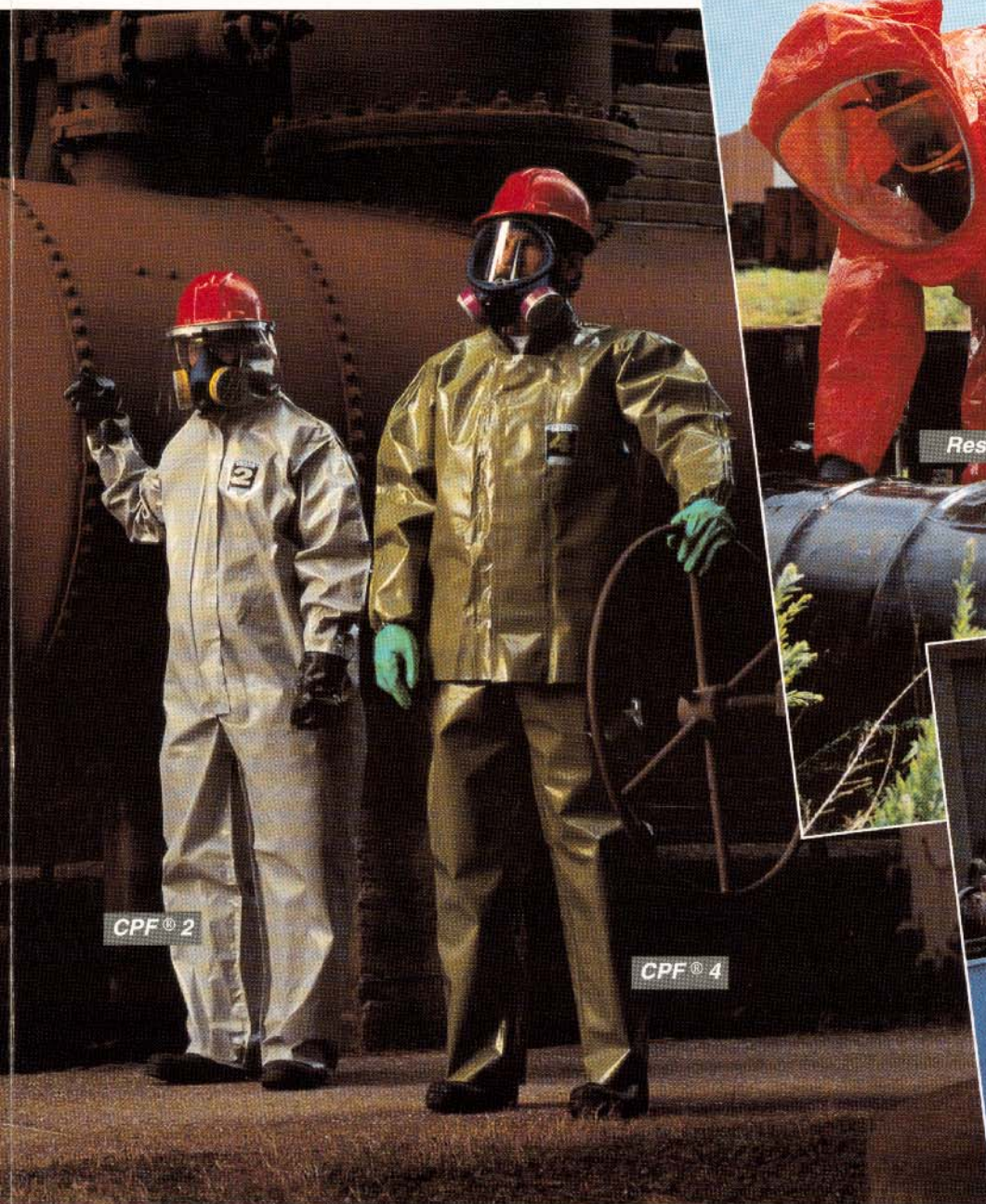
Applications: Chemical Handling, Petro Chemical Market, Hazardous Materials/Waste Clean-up, Fire Departments, Hazmat Teams, Utilities



Exclusively From Kappler, Innovative



Responder® – The hazmat leader worldwide. A Kappler patented limited-use fabric, *Responder* was the first material to survive eight full hours of the ASTM F1001 Test Battery with no permeation breakthrough. With more than 200 chemicals and gases tested to date, you know what you're getting into with *Responder*. It's tough, it's designed for mobility, and it keeps out the hazards – no wonder *Responder* is the number one choice for today's hazmat professional. Available in Level A and Level B totally encapsulating suits, NFPA Ensembles, coveralls and splash hoods, with seams sewn then Strapped. Color is blue.



High-End Hazmat Protection From System CPF®



Responder Plus™ – Kappler's new softer, stronger, high-viz hazmat garment – a strong statement of innovation in the limited-use market. Offering broad chemical

holdout like the original *Responder*, *Responder Plus* adds tremendous strength and durability in a softer fabric. And *Responder Plus* is meant to be seen, with high-visibility orange for added safety. This is the next generation of high-tech protection, only from Kappler. And now *Responder Plus* is available as part of an NFPA 1991 Ensemble, for certified protection against chemical flash hazards. Seams sewn and then double-Strapped (inside and out).



Reflector™ – The ultimate in chemical flash protection, only from Kappler. This is the first limited-use garment that combines broad chemical holdout with flash protection in a "single skin". *Reflector* offers excellent liquid and gas chemical holdout, passing the entire ASTM F1001 test battery with no breakthrough after eight hours. *Reflector* also meets two important NFPA requirements: It passes the flame impingement (burn) test, and it exceeds the NFPA 1991 thermal protective performance (TPP) standards for skin protection. Seams: Sewn then Strapped inside and outside for added protection.

Kappler System CPF® Technical Data

ASTM F1001 Chemical Test Battery - SYSTEM CPF

Normalized Breakthrough Time in Minutes ¹							
Chemical	CPF® 1	CPF® 2	CPF® 3	CPF® 4	Responder®	Responder Plus™	Reflector™
Acetone	<4	12	>480	>480	>480	>480	>480
Acetonitrile	<4	42	7	>480	>480	>480	>480
Carbon Disulfide	<4	<4	16	>480	>480	>480	>480
Dichloromethane	<4	<4	7	114	>480	>480	>480
Diethylamine	<4	14	>480	>480	>480	>480	>480
Dimethylformamide	25	95	>480	>480	>480	>480	>480
Ethyl Acetate	<4	28	>480	>480	>480	>480	>480
n-Hexane	<4	10	>480	>480	>480	>480	>480
Methanol	5	>480	8	>480	>480	>480	>480
Nitrobenzene	5	205	>480	>480	>480	>480	>480
Sodium Hydroxide	>480	>480	>480	>480	>480	>480	>480
Sulfuric Acid	>480	>480	>480	>480	>480	>480	>480
Tetrachloroethylene	<4	10	>480	>480	>480	>480	>480
Tetrahydrofuran	<4	<4	>480	>480	>480	>480	>480
Toluene	8	4	>480	>480	>480	>480	>480
Gases	CPF 1	CPF 2	CPF 3	CPF 4	Responder	Responder Plus	Reflector
Ammonia	NT	NT	12	>480	>480	>480	>480
1,3 Butadiene	NT	NT	>480	NT	>480	>480	>480
Chlorine	NT	>480	>480	NT	>480	>480	>480
Ethylene Oxide	NT	NT	NT	>480	>480	>480	>480
Hydrogen Chloride	NT	NT	NT	NT	>480	>480	>480
Methyl Chloride	NT	NT	NT	NT	>480	>480	>480

Typical Physical Properties (measured per ASTM D751) – SYSTEM CPF

Test Method	CPF 1	CPF 2	CPF 3	CPF 4	Responder	Responder Plus	Reflector
Mullen Burst (psi / kPa):	100 / 689	100 / 689	120 / 827	225 / 1551	174 / 1200	274 / 1889	834 / 5750
Breaking Strength MD:	62 / 275	65 / 289	72 / 320	124 / 552	92 / 409	177 / 787	502 / 2233
(Grab Tensile lb / N) XD:	45 / 200	43 / 191	58 / 258	135 / 600	93 / 414	155 / 689	439 / 1952
Trapezoidal Tear MD:	23 / 102	29 / 129	36 / 160	28 / 124	19 / 84	40 / 178	39 / 174
(lb / N) XD:	10 / 44	19 / 84	24 / 107	27 / 120	19 / 84	53 / 236	45 / 200

MD: Machine Direction XD: Cross Direction

¹ Breakthrough times normalized to a permeation rate of 0.1 ug/cm²/min in accordance with ASTM F739. Sources for all test data are independent laboratories. All tests were performed under laboratory conditions and not under actual use conditions. Tests were performed on material samples, not actual garments. These are considered to be typical physical properties and should not be construed as specifications.

WARNING: There are uses, environments and chemicals for which these garments and/or fabrics are unsuitable. It is the responsibility of the user to review available data and verify that the garment and/or fabric is appropriate for the intended use and meets all specified government and industry standards.

CAUTION: Do not use for fire protection. Avoid open flame or intense heat.

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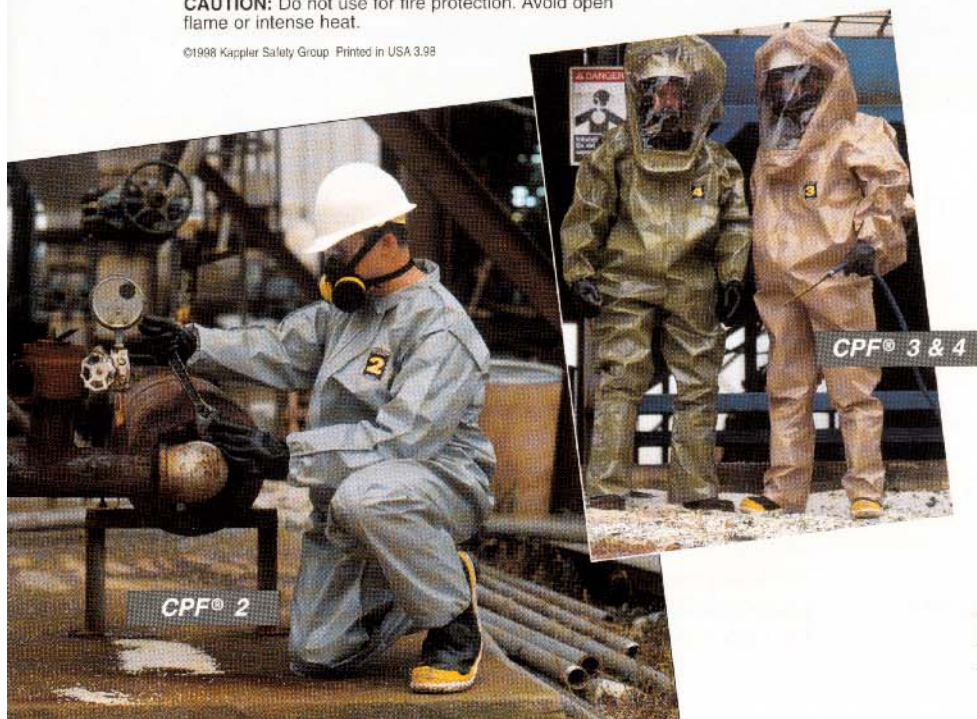
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Know What You're Getting Into.



Responder® CSM™ Garments Provide Assured Protection Against Agents



Dealing with chemical warfare (CW) agents, or Chemical Surety Materials (CSM), requires special protection. That's why Kappler and GEOMET joined forces to develop the



This symbol gives added assurance when dealing with CSM.

Responder CSM series of protective garments.

Kappler is the world leader in protective apparel, and GEOMET Technologies is one of the largest commercial

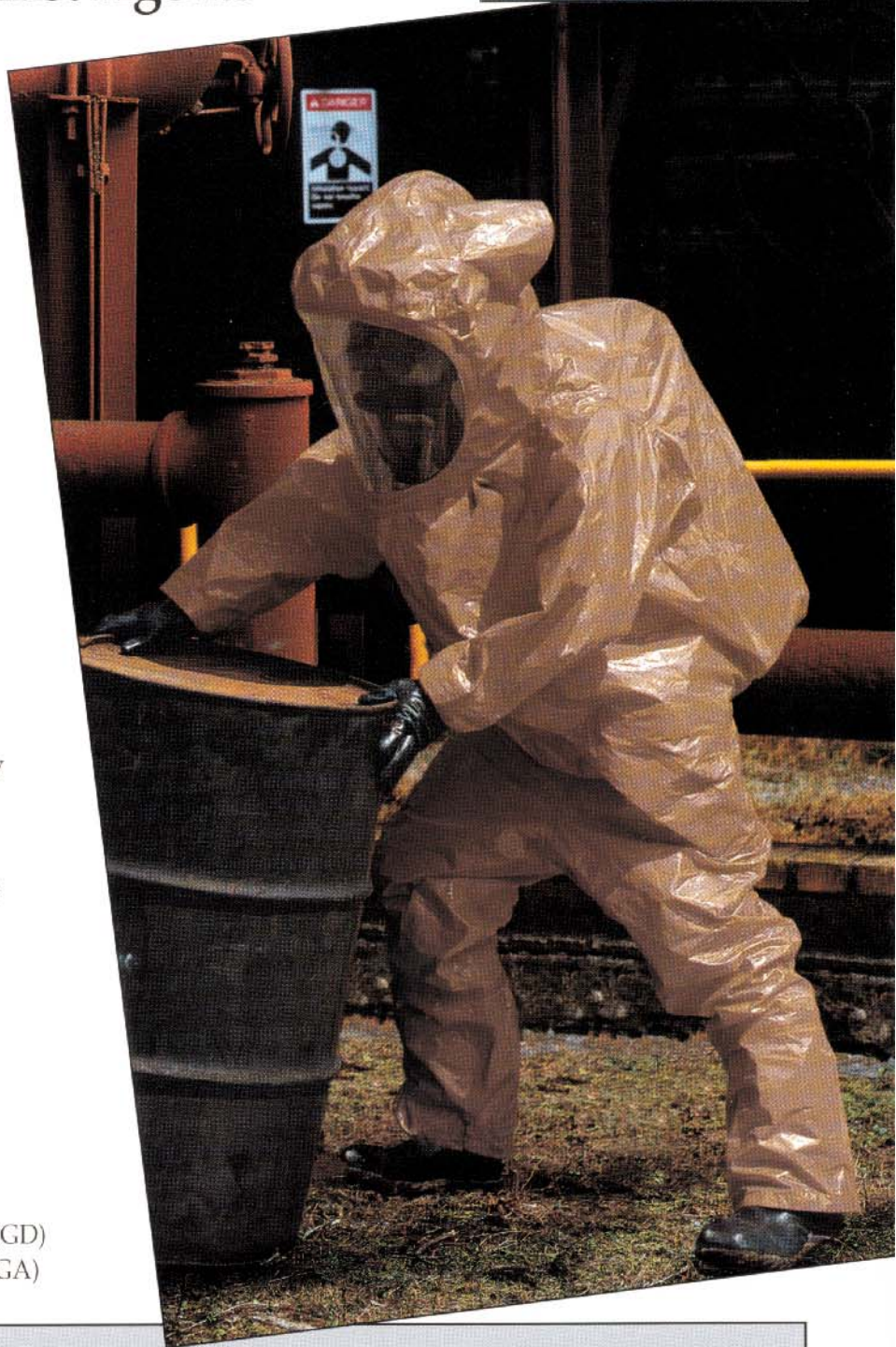
facilities certified by the U.S. Government to conduct testing with chemical warfare agents. Together they provide the assurance of protection plus qualification – a critical combination when exposed to the extreme toxicities of chemical warfare (CW) agents.

No longer isolated to military operations, the threat of CW agents is a reality for any organization in public safety. From municipal hazmat teams to federal security agencies, being prepared to work with CW agents is now standard procedure. And whether you're working in a lab, at a remediation site, or in emergency response activities, *Responder CSM* is available in a wide range of garment designs to meet your needs.

Chemical warfare agents are deadly and unpredictable. With state-of-the-art suits and meticulous testing and quality control, *Responder CSM* provides the protection you can count on.

Responder CSM Protects Against A Wide Range Of Agents

- Lewisite (L)
- Mustard (HD)
- Soman (GD)
- Nerve (VX)
- Sarin (GB)
- Tabun (GA)



Specialized Testing and Quality Control—the GEOMET Difference

Due to the greater toxicity of warfare agents compared to most industrial chemicals, GEOMET performs extensive quality control and quality assurance (QC/QA) testing on *Responder CSM* fabric and garments. As one of the largest government-certified facilities to work with warfare agents, GEOMET is uniquely qualified to perform the rigorous documentation required for

such a critical form of protection. Pre-production QC includes roll-by-roll testing of all suit material. And Kappler provides 100% inspection and pressure testing of all Level A *Responder CSM* suits in accordance with the ASTM-1052 standard. In addition, one suit per fabricated lot is randomly selected for seam and material testing with live toxic agents.

A Protective Apparel Newsletter from DuPont Nonwovens

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Lime-yellow Tychem® 10,000 protective apparel fabric is the best choice for bright or dim light, regardless of background.



When Is High Visibility Not Really High Visibility?

Ever wonder why lime-yellow fire trucks have one-third fewer accidents than red ones? Or why the Federal Aviation Administration specifies lime-yellow for airport fire and rescue vehicles? Or why European safety vests and cones are painted lime-yellow? The answer is simple: lime-yellow is one of the most visible colors.

Both theory and practice have proven that lime-yellow, the color of DuPont Tychem® 10,000 protective apparel fabrics, is the best color to use for objects that must be seen in either bright or dim light, regardless of the background. Bright yellow is almost as good.

It is no accident that when DuPont developed the Tychem® line of high-barrier fabrics, it chose the most visible colors: lime-yellow for Tychem® 10,000 and school-bus yellow for Tychem® 9400.

There are three important factors to consider when evaluating colors for safety applications:

- The visibility of the color in brightly lit situations;
- The visibility of the color in dimly lit situations; and
- The difference in color between the object and the background.

Our eyes are not equally sensitive to all colors. They are most sensitive to yellows and yellow-greens and relatively insensitive to blues and reds. The ease by which we see one color vs. another shifts slightly as the level of lighting changes. At night, reds and oranges become much harder to see.

To measure the visibility of a color, the intensity of the color at various wavelengths is compared to the sensitivity of the eye at those wavelengths. This is done separately for bright light (photopic) sensitivity and dim light (scotopic) sensitivity of the eye.

The other factor to consider when judging a safety color is contrast, which is the opposite of camouflage. The key to camouflage is to match the predominant colors in the background. For safety purposes, we want a color that will stand out from the background. Contrast can be measured by calculating the difference between the color and a standard reference. Neutral gray is often chosen as a reference background.

Dave Alman, Ph.D., Research Fellow, DuPont Automotive Finishes, has measured the safety factors of several commercial chemical protective apparel fabrics. Figure 1 (page 5) shows

(continued on page 5)

When Is High Visibility Not Really High Visibility?

(continued from page 1)

Figure 1. Tychem® protective apparel fabrics greatly outperform Responder® fabrics as shown in the graphs below. Performance is evaluated based on two key factors: intensity (height of curve) and overall visibility of the fabric at specific wavelengths (area under the curve). Note the poor overlap of the Responder® Plus spectra with the eye's dim light (scotopic) sensitivity and the poor overlap of the Responder® spectra with the eye's bright light (photopic) sensitivity.

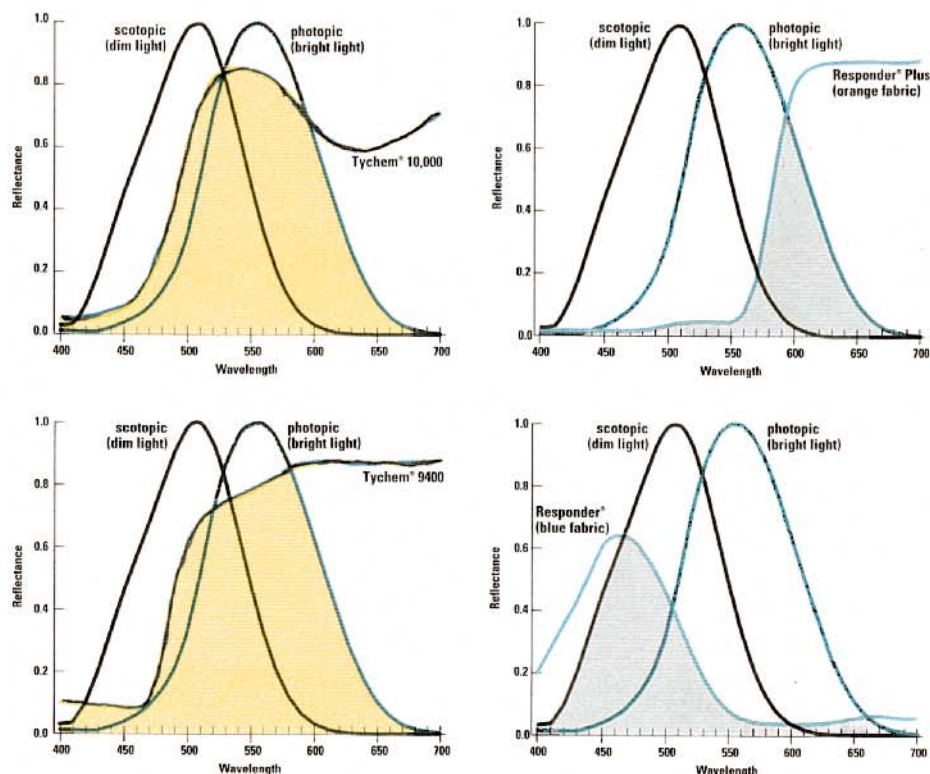


Table 1.
Visibility of
Various
Chemical
Protective
Garment
Fabrics

Fabrics	Color	Daylight Visibility	Nighttime Visibility	Contrast*	Visibility Index
Tychem® 10,000	Lime-Yellow	73	54	87	214
Tychem® 9400	Yellow	77	51	86	214
Responder® Plus	Orange	30	5	96	131
Responder®	Blue	14	38	53	105

*Only valid in bright light.

Responder® is a registered trademark of Kappler Safety Group.

daylight (photopic) and nighttime (scotopic) sensitivities of the human eye plotted against the spectra for Tychem® 10,000, Tychem® 9400, a blue chemical protective garment fabric and an orange chemical protective garment fabric. Although Tychem® 10,000 and Tychem® 9400 align closely with the sensitivity of the human eye, the brightest portion of orange spectrum is shifted to the right, while the blue spectrum is shifted to the left. Orange is difficult to see in low light because there is essentially no overlap with the dim light (scotopic) sensitivity of the eye. Likewise, blue has limited visibility due to a low overlap with the bright light (photopic) sensitivity of the eye.

Table 1 summarizes the data shown in the figure. Daylight and nighttime visibility are based on a scale of 0 to 100; contrast is based on a scale of 0 to 110. The visibility index, which is a composite of the three factors, provides a quick reference for determining the fabric with the best overall visibility.

The data presented here clearly show that orange is not a high-visibility color, but it does provide good background contrast. Unfortunately, orange is difficult to see because our eyes are insensitive to that color in low-light situations.

On the other hand, the lime-yellow color of Tychem® 10,000 and the school-bus yellow color of Tychem® 9400 are both easily seen and have high background contrast. They offer the best blend of visibility and contrast needed for a safety color.

Upcoming Events

Date	Event/Location	For More Information
3/3-3/5	Cleanrooms East '97 Hynes Convention Center – Boston, Mass.	Call Pennwell Publishing Company at (603) 891-9267. Stop by to visit us at DuPont Booth #415-417.
4/18-4/20	Fire Department Instructors' Conference Indiana Convention Center – Indianapolis, Ind.	Call The Alliance (Carlo Galvani) at (508) 881-5800. Stop by to visit us at DuPont Booth #1849.
5/13-5/15	EXPO FARMA – Mexico City, Mexico	Call DuPont Mexico at (525) 722-1216. Stop by to visit us at the DuPont Booth.
5/16-5/18	Midwest HazMat Conference Mundelein Holiday Inn – Mundelein, Ill.	Call Emery & Associates at (847) 680-0799. Stop by to visit us at the DuPont Booth.
5/17-5/23	American Industrial Hygiene Conference Dallas Convention Center – Dallas, Texas	Call AIHA at (703) 849-8888. Stop by to visit us at DuPont Booth #560.
5/29-6/1	International HazMat Response Teams Conference Sheraton Baltimore North – Towson, Md.	Call Dave Gudinas at (703) 273-0911. Stop by to visit us at the DuPont Booth.

SAVE MONEY – ACT TODAY!



List Price - \$64.90

Mention this promotion for Extra Savings.
Available through your wholesaler or order direct.

DESCRIPTION	SODIUM NITRITE INJECTION, USP 30 mg/mL
COMPARE TO	Contents of Cyanide Antidote Package
NDC #	60267-079-10
SIZE	10mL Ampuls Convenient Flip Top STAT-PAK™ contains 2 Ampuls

See package insert for complete prescribing information.



Hope Pharmaceuticals® • 7626 East Greenway Road #101 • Scottsdale, AZ 85260 • (800) 755-9595

NOW AVAILABLE FROM HOPE PHARMACEUTICALS

Sodium Thiosulfate Injection, USP 25%



DESCRIPTION	Sodium Thiosulfate Injection, USP 25% 250 mg/mL
NDC NUMBER	60267-823-50
SIZE	50 mL
VIALS PER SHELF PACK	1
WHOLESALE ITEM NUMBER	

See package insert for complete warnings, precautions, and indications for use.

**TO ORDER: CONTACT YOUR WHOLESALER,
DISTRIBUTOR, OR HOPE PHARMACEUTICALS
AT THE 800 TOLL-FREE NUMBER BELOW.**

HOPE
PHARMACEUTICALS™



November 2, 1998

Mr. Gregory Palomares
Technical Hazards/Equipment Specialist
Emergency Management Division
Research Planning, Inc.
6400 Arlington Blvd. Suite 1100
Falls Church, VA 22042

Dear Mr. Palomares:

Thank you for your inquiry into the availability of atropine sulfate tablets suitable for use in the treatment of victims of nerve agent poisoning.

Our presently marketed product, Sal-Tropine (atropine sulfate, USP 0.4 mg tablets), is indicated for oral use only. However, a "soluble tablet" containing 0.4 mg was available to reconstitute for intramuscular injection. This latter product had the following information in its accompanying prescribing information:

Indication:

"In poisoning by the organic phosphate cholinesterase inhibitors found in certain insecticides and by chemical warfare "nerve gases," large doses of atropine relieve the muscarine-like symptoms and some of the central-nervous-system manifestations."

Dosage and Administration:

"Solutions for intramuscular injection should be prepared by dissolving the soluble tablets in sterile water and administered by filtering the solution through a 0.22 μ membrane filter."

"Adults suspected of contact with organic phosphorus insecticides of the parathion type should be given atropine sulfate, 0.8 mg, intramuscularly. If an atropine effect is not apparent within 30 minutes or if definite symptoms of the poisoning occur (nausea, vomiting, diarrhea, pupillary constriction, pulmonary edema, fasciculations of the eyelids and tongue, jerky ocular movements, and excessive sweating, salivation, and bronchial secretion), atropine sulfate, 2 mg, should be given intramuscularly at hourly intervals until signs of atropinization are observed. Up to 2 or 3 times this dose (4 to 6 mg) may be required in severe cases."

Using a dose of 2 mg per treatment, I estimated the quantity of medication required by a Metropolitan Medical Strike Team (MMST) treating 1,000 symptomatic victims of nerve gas exposure:

1. Recommended treatment per patient per hour	2.0 mg atropine
2. Required number of tablets per patient per hour	5 tablets
3. Number of tablets required per hour	5,000
4. Estimated time for field operations	4 hours
5. Number of tablets required for 4 hours	20,000
6. Number of bottles required	200 (100's) or 20 (1,000's)
7. Number of tablets required by 25 MMST	500,000
8. Number of bottles required by 25 MMST	5,000 (100's) or 500 (1,000's)

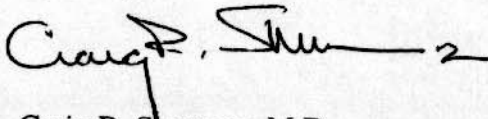
The following is a comparison of the features and benefits for the different dosage forms of atropine.

	Soluble Tablets	Ampuls/Vials
Storage Volume	Small	Large, due to required protective packaging
Container, Risk of Breakage	Plastic, No	Glass, Yes
Ease to Transport	Easy	Protective packaging required. Accidental mishandling in time of emergency may cause breakage.
Competitive Price	Yes	Limited - because of the cost of packaging components and the expense of sterile-fill manufacturing
Preparation	Dissolve tablets to make bulk solution of desired concentration. Filter solution through 0.22 μ membrane filter.	Draw medication from ampuls/vials into syringes. Administer several injections directly as required or prepare bulk solution of desired concentration. Filter as appropriate.
Personnel Safety - Needles	Needles required at time of administration of drug to patient. Minimal numbers of contaminated needles for safety of emergency personnel.	Needles required when preparing and administering drug. Numerous contaminated needles require diligent attention for proper disposal.
Personnel Safety - Container Handling		Risk of broken glass containers

The minimum batch size for production is 500,000 tablets. The shelf-life for the soluble tablet would be two years. Recommended storage conditions would be "controlled room temperature 59° - 86° F".

Thank you again for inquiry. If you are interested in the soluble atropine tablet, please contact me directly to discuss how we may serve you.

Sincerely,

A handwritten signature in black ink, appearing to read "Craig R. Sherman", followed by a horizontal line and the number "2".

Craig R. Sherman, M.D.
President

CRS:bbc

Kappler Technical Services

1-800-633-2410

Chemical Warfare Agent Data vs. Chemical Protective Fabric (CPF) 3

Chemical Warfare Agent	Breakthrough Time	Breakthrough Criteria	Test Method
Bis (2-chloroethyl) sulfide (Mustard:HD)	> 2 hours	4.0 ug/cm ²	204.1.1
Isopropyl methylfluorophosphate (Sarin:GB)	> 2 hours	1.25 ug/cm ²	206.1.2
Pinacolyl methylfluorophosphate (Soman:GD)	> 2 hours	0.5 ug/cm ²	T-208
O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothiolate (Nerve:VX)	> 2 hours	0.5 ug/cm ²	T-208

Testing was conducted at Battelle Labs Inc. in accordance with Military Standard, MIL-STD-282, Filter Units, Protective Clothing, Gas-Mask Components and Related Products: Performance-Test Methods.

WARNING: There are uses, environments and chemicals for which these garments and/or fabrics are unsuitable. It is the responsibility of the user to review available data and verify that the garment and/or fabric is appropriate for the intended use and meets all specified government and industry standards. **CAUTION:** Do not use for fire protection. Avoid open flame or intense heat.

Kappler Technical Services

1-800-633-2410

Chemical Warfare Agent Data vs. Responder Fabric and Double Taped Seams

Chemical Warfare Agent	Breakthrough Time	Breakthrough Criteria	Test Method
Bis (2-chloroethyl) sulfide (Mustard:HD)	>480 minutes	0.5 ug/cm ²	T-209
Isopropyl methylfluorophosphate (Sarin:GB)	>480 minutes	0.5 ug/cm ²	T-208
Pinacolyl methylfluorophosphate (Soman:GD)	>480 minutes	0.5 ug/cm ²	T-208
Chlorovinylarsinedichloride (Lewisite:L)	>480 minutes	0.5 ug/cm ²	T-209
O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothiolate (Nerve:VX)	>480 minutes	0.05 ng/cm ²	T-208

Testing was conducted at Battelle Labs in accordance with Military Standard, MIL-STD-282, Filter Units, Protective Clothing, Gas-Mask Components and Related Products: Performance-Test Methods.

WARNING: There are uses, environments and chemicals for which these garments and/or fabrics are unsuitable. It is the responsibility of the user to review available data and verify that the garment and/or fabric is appropriate for the intended use and meets all specified government and industry standards. **CAUTION:** Do not use for fire protection. Avoid open flame or intense heat.

Kappler Technical Services

1-800-633-2410

Responder[®]CSM[™] Chemical Resistance

Information Sheet: 303
Revision Date: 7/02/97

Responder CSM fabric has the same chemical permeation resistance as the original Responder fabric. This position is supported by the fact that Responder CSM utilizes the same proven chemical barriers as Responder.

Therefore, all chemical permeation resistance data available on Responder can also be applied to Responder CSM.

WARNING: There are uses, environments and chemicals for which these garments and/or fabrics are unsuitable. It is the responsibility of the user to review available data and verify that the garment and/or fabric is appropriate for the intended use and meets all specified government and industry standards.

Kappler Technical Services

1-800-633-2410

Chemical Warfare Agent Data vs. Chem-Tape™ 2

Chemical Warfare Agent	Breakthrough Time	Breakthrough Criteria	Test Method
Bis (2-chloroethyl) sulfide (Mustard:HD)	>480 minutes	0.5 ug/cm ²	T-209
Isopropyl methylfluorophosphonate (Sarin:GB)	>480 minutes	0.5 ug/cm ²	T-208
Pinacolyl methylfluorophosphonate (Soman:GD)	>480 minutes	0.5 ug/cm ²	T-208
O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothiolate (Nerve:VX)	>480 minutes	0.5 ug/cm ²	T-208

Testing was conducted at Battelle Labs in accordance with Military Standard, MIL-STD-282, Filter Units, Protective Clothing, Gas-Mask Components and Related Products: Performance-Test Methods.

WARNING: There are uses, environments and chemicals for which these garments and/or fabrics are unsuitable. It is the responsibility of the user to review available data and verify that the garment and/or fabric is appropriate for the intended use and meets all specified government and industry standards. **CAUTION:** Do not use for fire protection. Avoid open flame or intense heat.

Kappler Technical Services

1-800-633-2410

Can limited-use garments be reused and/or decontaminated?

Information Sheet: 101
Revision Date: 1/26/97

The answer to this question is not always a clear and concise one because no universal guidelines exist and no formal test method has been identified for decontamination.

When any article of protective clothing becomes contaminated with chemicals, it should either be discarded or decontaminated. The better choice in any given application depends on a variety of factors:

The toxicity of any chemical residue after decontamination

Unfortunately, there is no way to determine whether a chemical has been adequately removed from a garment to make it safe for reuse after decontamination.

- There is no definition of "*adequately*"
For example, how much chemical residue can be retained in a garment after decontamination without posing an excessive risk to the worker? The answer to that question depends on the safe skin-contact levels and on the rate of release of the trapped chemical from the material. Neither of these parameters has yet been determined.
- There is no good method to measure residues in protective clothing to learn if an adequate reduction has been achieved.
A molecule that permeates into a protective garment can end up in several places. It can permeate all the way through and reach the inside surface, it can remain dissolved within the polymer film, or it can be trapped in a reservoir that may exist within the garment. In the second and third cases, a decontamination process that cleans just the surface of the garment (water/detergent washing) may not remove the trapped chemical.
In order to achieve complete protection, any decontamination process must remove or destroy both surface contamination and also any hazardous material that has entered the garment matrix. For many chemicals, this is not an easy goal.

The endurance of the protective garments

Some materials may fail by losing permeation resistance, by developing cracks or pores, by becoming stiff, or by suffering other harmful changes in physical properties.

Cost

Discarding contaminated clothing may be the easiest, but most expensive option. Decontamination can be an attractive option if it helps to achieve optimum protection for workers at the lowest possible cost.

All of Kappler's suits are economical enough for disposal to avoid the uncertainty of decontamination. However, we understand that in certain cases decontamination may be an option. Below are some general guidelines:

When Decontamination for reuse is NOT recommended

- Level A chemical situations involving unknown chemicals
- Toxic chemicals - carcinogens, mutagens, skin-absorbers, etc
- Visible physical damage to the suit - tears, punctures, staining, deformation, etc

When Decontamination for reuse may be possible

- Identifiable chemical contaminant
- Non-toxic chemicals - non-carcinogenic, non-skin absorbers, etc
- Low amount of chemical exposure
- No physical damage to the suit

It is the responsibility of the user and Safety Officer in charge to understand the problems and issues related to decontamination, in order to make an informed decision concerning the reuse of any chemical suit. Perhaps the best advice when it comes to reusing limited-use clothing is: *"when in doubt, throw it out"*.

(Note: The above discussion is about decontamination for REUSE. Contaminated single-use protective clothing may result in the transfer of that contamination to the wearer's clothing during doffing of the CPC. In this situation, single-use garments should be decontaminated before the worker disrobes.)

tychem® 10000



Tychem 10,000 Level A Deluxe Encapsulated Suit, Style 10650

Fully encapsulated rear entry vapor-proof suit (Level A), sealed seams inside and out, 48" zipper, double storm flap with Velcro®, 2 layer faceshield (10 mil Teflon®/40 mil PVC), 3 layer glove combination of Butyl®, North® Silvershield®, and outer Kevlar® knit gloves, 2 Pirelli® valves, attached sock boots with boot flaps, 1" waist belt sewn (inside) and sealed. Storage bag included.

Sizes: S, M, L, XL

Case Pack: 1

Case Weight: 10 lbs.

Tychem 10,000 Level A Deluxe Encapsulated Suit, Style 10640

Same as above except front entry.

Tychem 10,000 Physical Data

Basis Weight (ASTM D3776-85)	9.5 oz/yd ²
Thickness (ASTM D1777-64)	29 mils
Mullen Burst (ASTM D3786-87)	204 psi
Breaking Strength – Grab (md/xd) (ASTM D1682-64, Sect 5.3)	197/178 lbs
Tearing Strength – Trapezoid (md/xd) (ASTM D1117-80)	36/50 lbs

Tychem® 10,000 Permeation Data

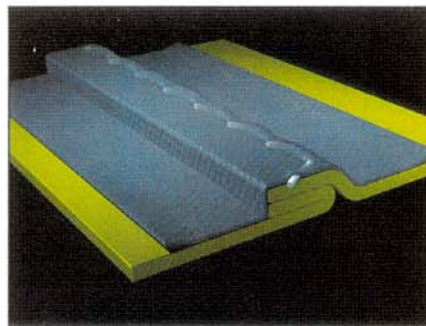
for ASTM Recommended List of Chemicals for Evaluating Protective Clothing Materials (ASTM F1001)

Chemical Name	Physical Phase	Normalized Breakthrough Time (minutes)	Permeation Rate (µg/cm ² /min)
Acetone	L	>480	ND
Acetonitrile	L	>480	ND
Ammonia (anhydrous)	G	>480	ND
1,3-Butadiene	G	>480	ND
Carbon Disulfide	L	>480	ND
Chlorine Gas	G	>480	ND
Dichloromethane	L	>480	ND
Diethylamine	L	>480	ND
N,N-Dimethylformamide	L	>480	ND
Ethyl Acetate	L	>480	ND
Ethylene Oxide	G	>480	ND
n-Hexane	L	>480	ND
Hydrogen Chloride	G	>480	ND
Methanol	L	>480	ND
Methyl Chloride	G	>480	ND
Nitrobenzene	L	>480	ND
Sodium Hydroxide, 50%	L	>480	ND
Sulfuric Acid (conc.)	L	>480	ND
Tetrachloroethylene	L	>480	ND
Tetrahydrofuran	L	>480	ND
Toluene	L	>480	ND

Index of Codes

ND=none detected, >=greater than, <=less than, L=Liquid, G=Gas

Numbers reported are averages of samples tested by the ASTM F739 test method. Sample results do vary and therefore averages for these results are reported.



Tychem 10,000 features heat sealed seams!

A heat sealed seam is sewn and then sealed with a heat activated tape. This method provides liquid proof seams, and is especially useful for Level A and B chemical protective clothing.



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Call 1-800-645-9291 for more information.

202 Pride Lane SW, Decatur, AL 35603 • 256-350-3873 • Fax: 256-350-0773

Email: lake@net-master.net • Internet: www.lakeland.com



Tychem 10,000 Economy Level A Encapsulated Suit, Style 10620

Flat back front entry vapor-proof suit (Level A), sealed seam on outside, 48" zipper, double storm flap with Velcro®, 40 mil PVC faceshield, butyl gloves, 2 Pirelli® valves, attached sock boots with boot flaps, 1" waist belt sewn (inside) and sealed. Storage bag included.

Sizes: S, M, L, XL

Case Pack: 1

Case Weight: 10 lbs.

Tychem 10,000 Economy Level A Encapsulated Suit, Style 10630

Same as above except rear entry.



Tychem 10,000 Economy Level A Encapsulated Suit, Style 10660

Fully encapsulated front entry vapor-proof suit (Level A), sealed seam on outside, 48" zipper, double storm flap with Velcro®, 40 mil PVC faceshield, butyl gloves, 2 Pirelli® valves, attached sock boots with boot flaps, 1" waist belt sewn (inside) and sealed. Storage bag included.

Sizes: S, M, L, XL

Case Pack: 1

Case Weight: 10 lbs.

Tychem 10,000 Economy Level A Encapsulated Suit, Style 10670

Same as above except rear entry.



Tychem 10,000 Training Suit, Style 10495

Encapsulated Training Suit, front entry, sewn seams, 20 mil PVC faceshield, butyl gloves, attached sock boots with boot flaps.

Sizes: S, M, L, XL

Case Pack: 1

Case Weight: 8 lbs.

Tychem 10,000 Training Suit, Style 10490

Same as above except rear entry.

Warning! These suits are for training in Level A procedures only! Do not use in actual Level A hazmat environments!

Options and Accessories for Level A/NFPA Suits



Quick Disconnect Assembly for Gloves

Replacing the gloves on your encapsulated suit is a snap with this quick disconnect assembly. Glove unit twists off for easy removal and installation. Made of tough, durable plastic for long wear.

Quick DisconnectOption No. G7



Pass-Thru's

Air supply pass thru's from your favorite manufacturer can be installed, making hook-up fast and easy. Pass thru's available from Scott®, Survivair®, Draeger®, MSA®, Interspiro®, ISA®, and North®. Call Lakeland Customer Service for details at 1-800-645-9291.



Test Kit for Level A/NFPA Encapsulated Suits

Kit features an easy to read Magnehelic pressure gauge, digital timer, sturdy brass and steel fittings, plastic hose and connectors enclosed in a water-proof case. Complete instructions included.

Level A Pressure Test KitPart No. 00010

NFPA Pressure Test KitPart No. 00011

tychem®

9400

Level



Tychem® 9400 – Safety You Can Wear!

Tychem® 9400, a state-of-the-art fabric, provides excellent protection against a broad range of chemicals. The material is tough, durable and tear-resistant, and holds its own among many other reusable apparel fabrics that are consider-

ably more costly. It is a copolymer film laminated to a rugged, spun-bonded material from DuPont. Suits of Tychem® 9400 are tops for many applications from splash protection to basic clean-up tasks.

The garments are designed in several standard styles, a fact that makes this high-visibility yellow wear a very popular choice in the chemical industry. All models are constructed with set-in sleeves for added strength, freedom of movement and wearer comfort. Tychem® 9400 garments are durable, tear resistant and economical to use. Garments meet all fabric requirements of NFPA 1993.



Encapsulated Suit, Style 94400

Tychem® 9400 encapsulated suit, (Level B), rear entry, flat back, 48" zipper, storm flap, 20mil PVC faceshield, elastic wrists, 1 exhaust port with shroud, air tube inlet, attached sock boots with boot flaps.

Sizes: S, M, L, XL

Case Pack: 3

Case Weight: 13 lbs.



Encapsulated Suit, Style 94450

Tychem® 9400 encapsulated suit (Level B), rear entry, expanded back, 48" zipper, double storm flap with Velcro®, 20 mil PVC faceshield, elastic wrists, 2 exhaust ports with shrouds, attached sock boots with boot flaps.

Sizes: S, M, L, XL

Case Pack: 3

Case Weight: 13 lbs.

Tychem® 9400 Physical Data

Basis Weight (ASTM D3776-85)	6.1 oz/yd ²
Thickness (ASTM D1777-64)	17 mils
Mullen Burst (ASTM D3786-87)	110 psi
Breaking Strength – Grab (md/xd) (ASTM D1682-64, Sect 5.3)	107/71 lbs
Tearing Strength – Trapezoid (md/xd) (ASTM D1117-80)	48/27 lbs

Tychem® 9400 Permeation Data

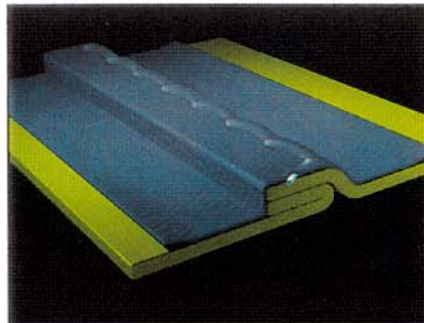
for ASTM Recommended List of Chemicals for Evaluating Protective Clothing Materials (ASTM F1001)

Chemical Name	Physical Phase	Normalized Breakthrough Time (minutes)	Permeation Rate (µg/cm ² /min)
Acetone	L	>480	ND
Acetonitrile	L	>480	ND
Ammonia (anhydrous)	G	45	0.69
1,3-Butadiene	G	>480	ND
Carbon Disulfide	L	>480	ND
Chlorine Gas	G	>480	ND
Dichloromethane	L	391	0.09
Diethylamine	L	>480	ND
N,N-Dimethylformamide	L	>480	ND
Ethyl Acetate	L	>480	ND
Ethylene Oxide	G	>480	ND
n-Hexane	L	>480	ND
Hydrogen Chloride	G	>480	ND
Methanol	L	150	0.91
Methyl Chloride	G	>480	ND
Nitrobenzene	L	>480	ND
Sodium Hydroxide, 50%	L	>480	ND
Sulfuric Acid (conc.)	L	>480	ND
Tetrachloroethylene	L	>480	ND
Tetrahydrofuran	L	>480	ND
Toluene	L	>480	ND

Index of Codes

ND=none detected, >=greater than, <=less than, L=Liquid, G=Gas

Numbers reported are averages of samples tested by the ASTM F739 test method. Sample results do vary and therefore averages for these results are reported.



Tychem 9400 features heat sealed seams!

A heat sealed seam is sewn and then sealed with a heat activated tape. This method provides liquid proof seams, and is especially useful for Level A and B chemical protective clothing.



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Lakeland

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Fax: 205-350-0773
Email: lake@net-master.net
Internet: www.lakeland.com

ATTN: Greg Palomares, RPI
FROM: Carl Brown – International Sales Representative
RE: DuPont Fabric strengths vs. Kappler

Test Method	Tychem 10,000	Responder	Variance	Winner	Notes
Mullen Burst (psi)	204	174	30	DuPont	
Breaking Strength MD	197	92	105	Dupont	
Breaking Strength XD	178	93	85	Dupont	
Tearing Strength MD	36	19	17	Dupont	
Tearing Strength XD	50	19	31	Dupont	
Test Method	Tychem 10,000	Responder Plus	Variance	Winner	Notes
Mullen Burst (psi)	204	274	-70	Kappler	
Breaking Strength MD	197	177	20	DuPont	
Breaking Strength XD	178	155	23	Dupont	
Tearing Strength MD	36	40	-4	Kappler	Negligible Difference
Tearing Strength XD	50	53	-3	Kappler	Negligible Difference

MD = Machine Direction
XD = Cross
Direction

mance

ion



VALUE QUALITY DEPENDABILITY INTEGRITY
Since 1953



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mac**

3	WE ARE MAR MAC
4 & 5	MATERIALS
4 & 5	MAR MAC APPAREL AND MATERIALS LOCATOR CHART
5	SEAM CONSTRUCTIONS
	 Fully Encapsulating Suits
6 & 7	COMMANDER SERIES
8 & 9	COMMANDER ULTRAPRO
10	COMMANDER BRIGADE
11	COMMANDER 10,000
12	COMMANDER 9400
	 Fully Encapsulating Suits
13	PROBE SERIES
14	UTILITY SERIES
15	ECONOMY SERIES
16 & 17	ACCESSORIES For Fully Encapsulating Suits
18 & 19	PERFORMANCE SERIES PROTECTIVE APPAREL
20 & 21	PERFORMANCE SERIES Garment Specifier Chart
22	MAR MAC SIZING CHARTS
23	INDEX

Mar Mac Quality Policy:

Mar Mac shall be recognized by its customers, vendors, employees and competitors as committed to providing superior value through its products, services and corporate character in the markets it serves. This superior value shall be reached and maintained by continuous improvements in our products, services and leadership.

Mar Mac Manufacturing was founded in 1953 with the simple goal of providing quality products and superior service to its customers. Today Mar Mac is a team of over 500 dedicated individuals working to meet that same goal.



MAR MAC MANUFACTURING COMPANY, INC.
MCBEE, SOUTH CAROLINA



MAR MAC MANUFACTURING COMPANY, INC.
CHESTERFIELD, SOUTH CAROLINA



CAM RAM MANUFACTURAS S.A. DE C.V.
JUAREZ, MEXICO




CAM RAM MANUFACTURAS S.A. DE C.V.
JUAREZ, MEXICO


ULTRAPRO™

 Chemfab's unique Teflon composite material provides reusability, outstanding chemical permeation resistance and unsurpassed durability. UltraPro's inherent strength, abrasion and flame resistant properties offer significant advantages over other reusable materials.


TYCHEM® 10,000

 Tychem 10,000 offers the highest level of limited-use protection available from DuPont. It consistently rates excellent on permeation performance with no breakthrough after exposure times of 8 hours to a wide variety of challenge chemicals. Tychem 10,000 is so durable that it can handle both emergency response and remediation work.


TYCHEM® 9400

 Tychem 9400 offers excellent chemical protection against a broad range of chemicals. It is a very durable, tear resistant material that rivals many reusable apparel materials but costs much less.


TYCHEM® SL

(TYVEK®/SARANEX®23-P)
 This multi-layer material provides protection from a wide range of chemicals such as acids, bases, insecticides, pesticides and many other potentially harmful agents.


TYVEK® QC

 Tyvek quality-coated with polyethylene provides excellent protection from many dry particulates and liquid splash.

TYVEK®

 Tyvek combines light weight, durable wearability and high barrier characteristics with low linting and anti-static properties. Tyvek offers outstanding performance for many industrial and agricultural applications.

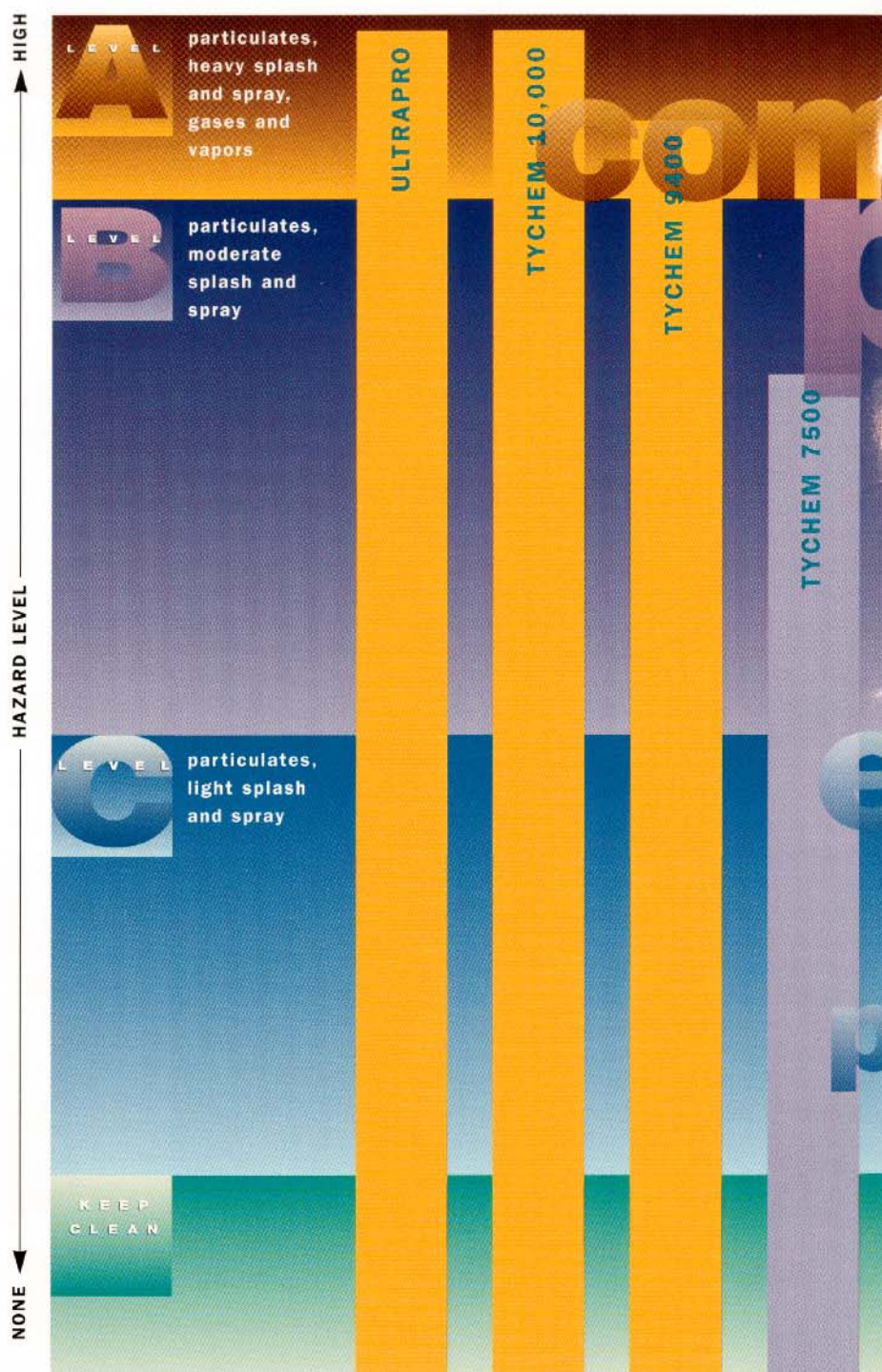
TYVEK® FC

 Tyvek FC is coated to enhance the friction and durability properties for use in boot covers and shoe covers.

Mar Mac Apparel and

WARNING This chart is provided as a general information guide for users of Mar Mac protective apparel. It is not intended as a (AIHA) and OSHA publish procedures and standards for the evaluation of personal protective equipment. The information in this chart necessary for evaluation under their own specific end use conditions and at their own discretion and risk should use this chart for no liability as to the suitability of the information contained in this chart, the garments, and/or materials for a particular use.

DANGER! Serious injury or death may occur from improper use of the personal protective garments described in this chart.



FR MARGARD®



Flame Resistant
MarGard's comfort,
higher melt point and
ignition temperature
make it suitable for

environments with potential heat and/or
small ignition hazards.

SPUNBONDED
POLYPROPYLENE

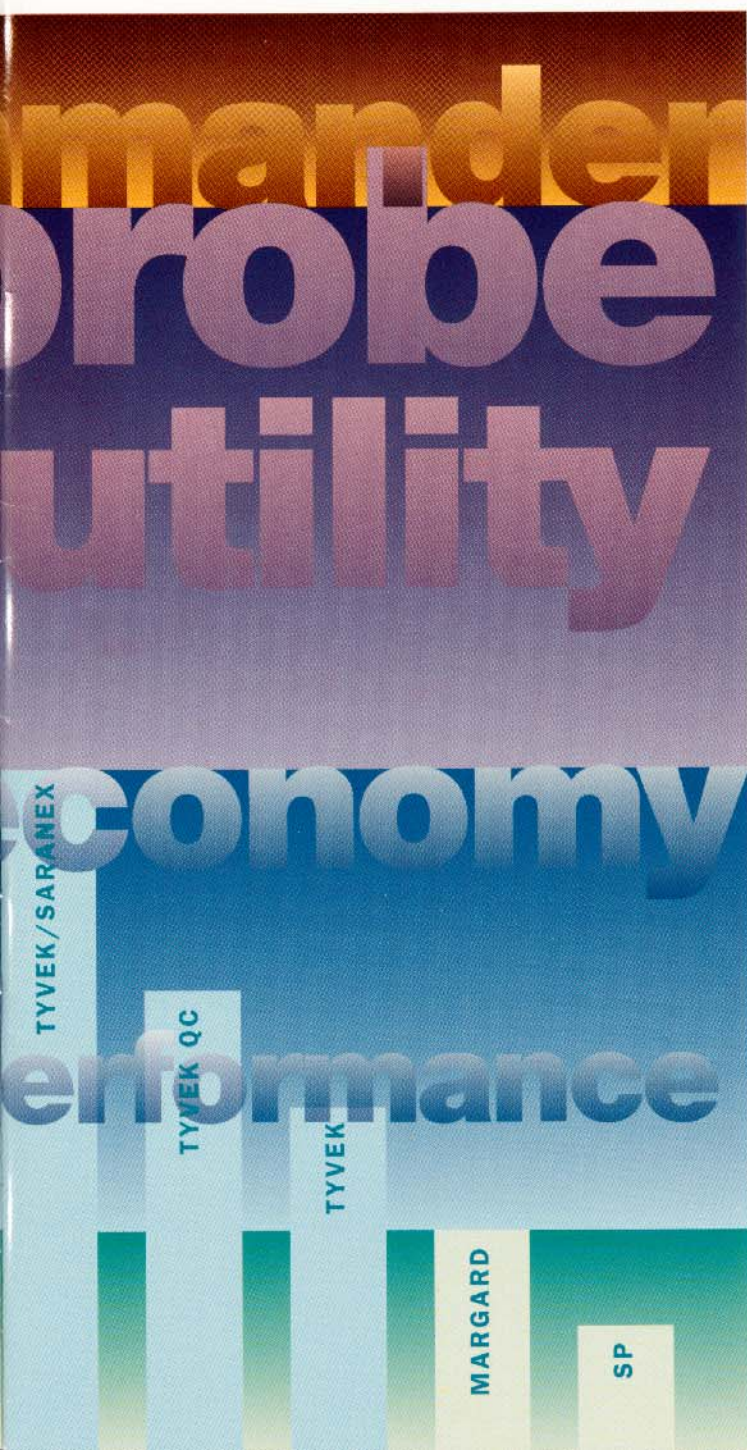


This lightweight, low
barrier material is suitable
for keep-clean and non-
hazardous applications.



Materials Locator

guide for the selection of specific garments for a specific use. The American Industrial Hygiene Association is intended to be used as part of those evaluation procedures. Only professionals with the technical skills selecting personal protective garments. Mar Mac makes no warranties, expressed or implied, and assumes



ULTRA BOND

The **Ultra Bond** seam is heat sealed and taped both inside and out. This proven seam construction provides excellent strength and chemical/vapor protection.



THERMO BOND MAX

The **Thermo Bond Max** seam is sewn and taped both inside and out. This seam construction combines outstanding strength with excellent chemical/vapor protection.



THERMO BOND

The **Thermo Bond** seam is sewn and taped. This exceptionally strong and chemical resistant seam construction provides a reliable barrier against heavy liquid splashes and rigorous seam stress.



ENFOLD WELD

The **Enfold Weld** seam construction is ultrasonically sealed with no needle holes. This unique seam offers high strength and penetration resistance for light spray and splash.



BOUND

This tightly sewn seam is reinforced with an outer binding to further enhance seam strength and barrier quality.



SEWN

This overedge serged seam construction offers protection against many dry particulates and light sprays.



LEVEL

CHEMICAL
VAPOR
PROTECTION
SUITS

COMM

The Next Generation



COMMANDER BRIGADE 10,000R91

COMMANDER ULTRAPRO 79101

COMMANDER® SERIES

Mar Mac's Commander Series of Level A suits for chemical liquid and vapor protection offer unmatched defense in your assault against hazardous materials.

Commander Series suits are designed for protection, mobility and proper fit. To target your hazmat needs, suits are available in various styles, chemical protective materials and seam constructions and with accessory options.

For the very best in protection Mar Mac's Commander Series has you covered. Select from:

COMMANDER ULTRAPRO
COMMANDER BRIGADE
COMMANDER 10,000
COMMANDER 9400

Contact Mar Mac's experienced manufacturer support staff for thorough technical data to help you choose the right Commander for your needs.

WARNING

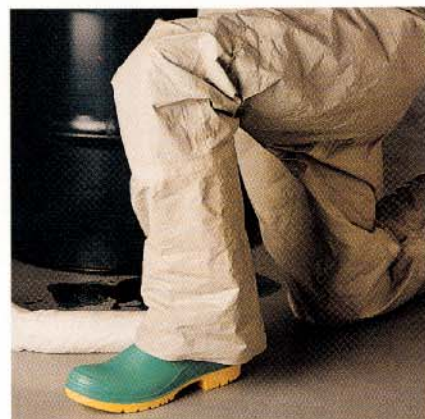
These garments, materials, and accessories are **not suitable** for use in some environments and with some chemicals and hazardous agents. It is the user's responsibility to determine the level of risk in a particular environment and the proper personal protective equipment needed. Because conditions of use are out of Mar Mac's control, Mar Mac makes no warranties, expressed or implied, and assumes no liability as to the performance of these products for a particular use.

DANGER

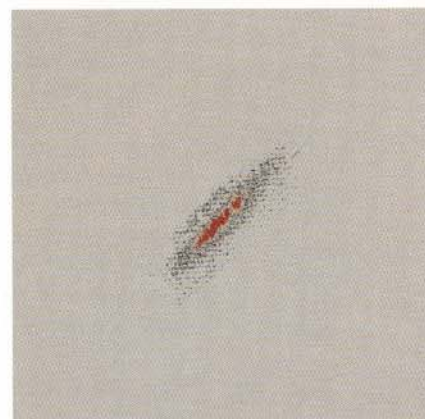
Serious injury and/or death may occur from improper use of these products. It is up to you, the user, together with your employer to evaluate the work environment and determine the safe and appropriate use of these products. Contact Mar Mac or your distributor for additional technical and safety information.



expanded respirator hood + wide view face shield



triple foot/leg protection



color coded abrasion indicator layer
(UltraPro)

LEVEL

CHEMICAL
VAPOR
PROTECTION
SUITS

com



ultra



COMMANDER ULTRAPRO 79101



COMMANDER ULTRAPRO

Mar Mac and Chemfab join forces to offer the ultimate in reusable Level A protection. The **Commander UltraPro** combines Mar Mac's years of customer oriented garment design, service and support with Chemfab's unique, state-of-the-art materials and quality craftsmanship. The **Commander UltraPro** is NFPA 1991 (1994 edition) certified as a single layer, totally encapsulating, vapor-protective suit.

If your hazmat demands require exceptional features in a reusable Level A suit, specify **Commander UltraPro**:

- Single layer garment (no oversuit required)
- NFPA 1991 (1994 edition) certification
- Broad based chemical protection (>480 min. for all ASTM F1001 chemicals)
- Exceptional strength and durability
- Inherent flame resistance
- Antistatic properties
- Multiple form fit sizes
- Extra wide view visor
- Color coded abrasion indicator layer

FEATURES

primary material	Chemfab UltraPro Teflon® composite
color	Gray
seams	Ultra Bond
hood	Expanded respirator fit
face shield	Extra wide view 2 layer (30 mil) Inner: 10 mil FEP Teflon® Outer: replaceable, scratch resistant 20 mil PVC overlay
closure	Gas tight zipper Double storm flap cover
valves	2 exhaust valves
arm/hand	Wrist flap Reinforced elbow 3 layer glove system – Neoprene/EVOH film/Kevlar® knit
leg/foot	Triple protection – Inner sock boot/outer boot flap/knee wear pad
sizes	S-3XL form fit sizes Internal adjustable belt
options	Pressure test kit, pass throughs and custom add ons (see accessories pages 16 & 17)

Commander
UltraPro Styles



front entry	79102
rear entry	79101

LEVEL
CHEMICAL
VAPOR
PROTECTION
SUITS

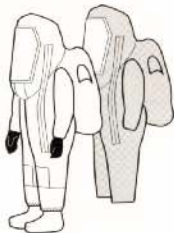
Superior Hazmat Protection



COMMANDER BRIGADE 10,000R91



Commander Brigade Ensemble Styles



front entry	10,000F91
rear entry	10,000R91

COMMANDER BRIGADE

Lead your team against a broad range of hazardous chemicals and vapors with Mar Mac's **Commander Brigade**. This Level A ensemble incorporates the **Commander's** superior design configuration with Dupont's unsurpassed Tychem 10,000 limited-use, chemical barrier material and an aluminized overcover. The **Commander Brigade** is certified compliant to the NFPA 1991 (1994 edition) Standard on Vapor Protective Suits for Hazardous Chemical Emergencies.

- Broad based chemical protection (>480 min. for all ASTM F1001 chemicals)
- Exceptional strength and durability
- Cost effective limited-use protection
- NFPA 1991 (1994 edition) certified

FEATURES

primary material	Inner suit: DuPont Tychem 10,000 Overcover: aluminized fiberglass
color	Inner suit: high visibility lime-yellow Overcover: silver
seams	Inner suit: Thermo Bond Max Overcover: Sewn Nomex®
hood	Expanded respirator fit
face shield	Extra wide view 4 layer (85 mil) – Inner suit: 40 mil PVC/5mil Teflon®/20 mil PVC Overcover: 20 mil Lexan®
closure	Inner suit: gas tight zipper Double storm flap cover Overcover: velcro closure
valves	2 exhaust valves
arm/hand	Inner suit: 3 layer glove system – Neoprene/ EVOH film/Kevlar knit Overcover: velcro sleeve closures
leg/foot	Triple protection – Inner sock boot/outer boot flap/knee wear pad
sizes	S-3XL form fit sizes Internal adjustable belt
options	Pressure test kit, pass throughs and custom add ons (see accessories pages 16 & 17)



COMMANDER 10,000FB



FRONT ENTRY

Commander 10,000 Styles

Butyl gloves	10,000FB
Viton gloves	10,000FV



COMMANDER 10,000RAV



REAR ENTRY

10,000RB

10,000RV



FRONT ENTRY

10,000FAB

10,000FAV



REAR ENTRY

10,000RAB

10,000RAV

COMMANDER 10,000

Take the offensive against dangerous hazmat encounters with Mar Mac's Commander 10,000 Level A suits. Offering unparalleled protection, the advanced Commander design and DuPont's innovative Tychem 10,000 material take limited use Level A protection to the next level. The Commander 10,000 is certified compliant to ASTM F1052.

- Exceptional strength and durability
- Broad based chemical protection (>480 min. for all ASTM F1001 chemicals)
- Lightweight wearability

FEATURES

primary	
material	Dupont Tychem 10,000
color	High visibility lime-yellow
seams	Thermo Bond Max
hood	Expanded respirator fit
face shield	Extra wide view 3 layer (65 mil) – 40 mil PVC/5mil Teflon/20 mil PVC
closure	Gas tight zipper Double storm flap cover
valves	2 exhaust valves
gloves	2 layer system – EVOH film/Butyl or Viton®
leg/foot	Triple protection – Inner sock boot/outer boot flap/knee wear pad
sizes	S-3XL form fit sizes Internal adjustable belt
options	Pressure test kit, pass throughs and custom add ons (see accessories pages 16 & 17)

LEVEL
CHEMICAL
VAPOR
PROTECTION
SUITS

LEVEL

CHEMICAL VAPOR PROTECTION SUITS



COMMANDER 9400RB

COMMANDER 9400RAB

LEVEL

CHEMICAL SPLASH SUITS



PROBE 100136

COMMANDER 9400

Equip your crew economically with the Mar Mac Commander 9400's high quality, limited use Level A protection. Made of DuPont's Tychem 9400, the Commander 9400 is certified compliant to ASTM F1052.

- Broad based chemical protection (>480 min. for most ASTM F1001 chemicals)
- Economical
- High strength and durability
- Lightweight wearability

FEATURES

primary

material Dupont Tychem 9400

color Safety yellow

seams Thermo Bond

hood Expanded respirator fit

face shield Extra wide view

3 layer (65 mil) –
40 mil PVC/5mil Teflon/
20 mil PVC

closure Gas tight zipper

Double storm flap cover

valve 1 exhaust valve

gloves 2 layer system –

EVOH film/Butyl or Viton

leg/foot Triple protection –

Inner sock boot/outer boot
flap/knee wear pad

sizes S-3XL form fit sizes

Internal adjustable belt

options

Pressure test kit, pass throughs
and custom add ons (see
accessories pages 16 & 17)

Commander 9400 Styles



FRONT ENTRY



REAR ENTRY



FRONT ENTRY



REAR ENTRY

Butyl gloves	9400FB	9400RB	9400FAB	9400RAB
Viton gloves	9400FV	9400RV	9400FAV	9400RAV

Unparalleled Level B Protection



PROBE 94636



FRONT ENTRY



REAR ENTRY

Probe Styles

Tychem 10,000

100136

100636

Tychem 9400

94136

94636

PROBE® SERIES

For a Level B suit with Level A design features, Mar Mac's **Probe** sets the pace. Introducing design features normally offered in advanced Level A suits, the Probe is the pinnacle of Level B protection for hazardous jobs that require fully encapsulating, yet non-gas tight protective apparel.

- Broad based chemical protection
- Exceptional strength and durability
- Teflon/PVC face shield
- Internal adjustable belt
- 2 exhaust valves

FEATURES

primary

material Tychem 10,000
Tychem 9400

color High visibility lime-yellow
Safety yellow

seams Thermo Bond

hood Expanded respirator fit

face shield Extra wide view
3 layer (30 mil) –
20 mil PVC/5 mil Teflon/
5 mil polyester

closure Zipper/PVC zip lock
Double storm flap cover

valves 2 exhaust valves

arm Elastic wrist
Elastic wrist flap

leg/foot Triple protection –
Inner sock boot/outer boot
flap/knee wear pad

sizes S-3XL form fit sizes
Internal adjustable belt

options Pass throughs, glove ring
assemblies and custom add ons
(see accessories pages 16 & 17)

LEVEL
CHEMICAL
SPLASH
SUITS

Functional Level B Protection

UTILITY SERIES

Mar Mac Utility Series Level B fully encapsulating suits offer functional protection for identified dangers. Utility Series garments are available in four proven DuPont materials with a choice of styles to meet your job requirements.

- Exceptional strength and durability
- Broad based chemical protection
- High visibility

FEATURES

primary

material Tychem 10,000
Tychem 9400

color Tyvek/Saranex 23-P
High visibility lime-yellow
Safety yellow

seams White
Thermo Bond

hood Expanded respirator fit

face shield Extra wide view
20 mil PVC

closure Zipper/PVC zip lock
Double storm flap cover

vents 2 exhaust vents

arm Elastic wrist

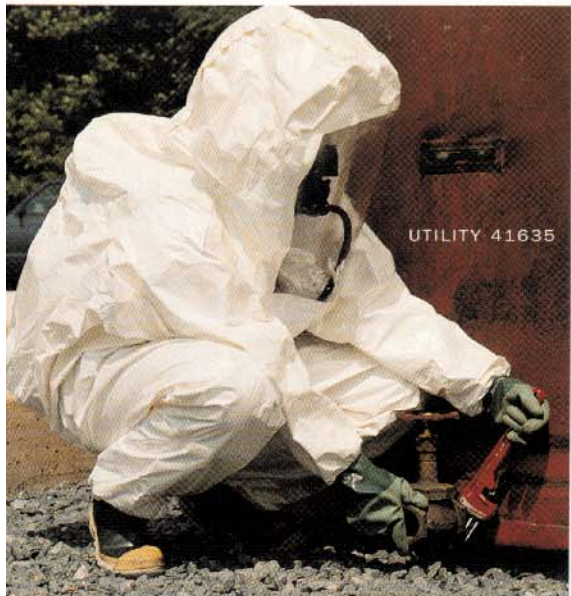
leg/foot Inner sock boot with outer boot flap
S-3XL form fit sizes

options Pass throughs, glove ring
assemblies, valves and custom
add ons (see accessories pages
16 & 17)



UTILITY 100135

UTILITY 94133



UTILITY 41635

Utility Styles



FRONT ENTRY



REAR ENTRY



REAR ENTRY

Tychem 10,000	100135	100635	100133
Tychem 9400	94135	94635	94133
Tyvek/Saranex 23-P	41135	41635	41133

Economical Full Coverage



ECONOMY 42135

ECONOMY 37133

ECONOMY SERIES

Mar Mac's Economy Series fully encapsulating suits are available for jobs that require only limited protection but total body coverage.

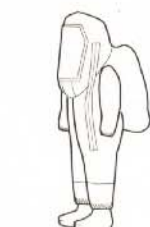
For situations posing minimal hazard but requiring full coverage apparel, select from the Economy Series:

- Low cost
- 3 DuPont material choices

FEATURES

primary material	Tyvek/Saranex 23-P Tyvek QC Tyvek
color	White Yellow White
seams	Bound (except Tyvek: sewn)
hood	Expanded respirator fit
face shield	Extra wide view 20 mil PVC (except Tyvek: 5 mil polyester)
closure	Zipper Storm flap cover (except 14133)
vent	1 exhaust vent
arm	Elastic wrist
leg/foot	Inner sock boot with outer boot flap (except 133 styles - overboot)
sizes	S-3XL form fit sizes
options	Pass throughs, valves and custom add ons (see accessories pages 16 & 17)

Economy Styles



FRONT ENTRY



REAR ENTRY



REAR ENTRY

Tyvek/Saranex 23-P	42135	42635	42133
Tyvek QC			37133
Tyvek			14133

LEVEL

CHEMICAL
SPLASH
SUITS



various compatible pass throughs

◀ PASS THROUGHS

Mar Mac offers several pass throughs to meet your requirements.

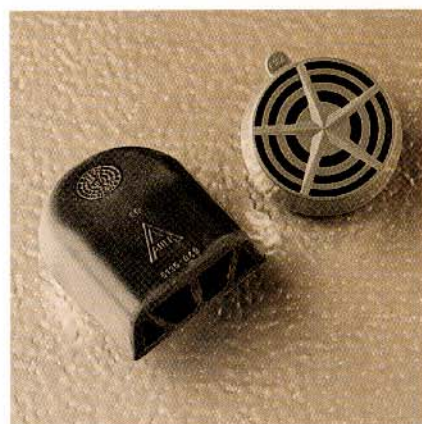
Draeger with Foster fitting	99002
Draeger with Hansen fitting	99003
Interspiro	99004
ISI	99005
MSA dual purpose with Foster fitting	99006
MSA quick fill	99019
Scott with Hansen fitting	99007
Scott with Schrader fitting	99008
Survivair with Foster fitting	99010
Survivair with Hansen fitting	99011
Survivair with Schrader fitting	99012

GLOVE RING ASSEMBLIES

Mar Mac's detachable glove ring assembly allows user to change outer glove as needed. Additional external glove rings that attach to the internal ring of 99015 offer numerous glove options.



99015 – glove ring assembly / detachable twist lock



99026 / 99018

◀ AIR RELIEF VALVES

flapper exhaust valve	99018
low pressure air relief valve	99026

FACE SHIELD

Replacement cover lens for Commander UltraPro.

face shield	99025
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99016 / 99014

IDENTIFICATION NUMBERS

Large, high contrast field identification.

adhesive numbers	99020
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REPAIR KIT

For use with Commander UltraPro, this convenient kit contains material patches, tape, scissors, sealing and tacking iron, electronic timer, and cooling and sealing blocks.

repair kit	99021
-------------------	--------------

SUIT BAG

Carry bag for fully encapsulating suits. (Not suitable for Commander UltraPro.)

suit bag	99022
-----------------	--------------

	LEVEL A	LEVEL B
detachable twist lock assembly	99015	99015
glove half of twist lock assembly	99016	99016
butyl o-rings with PVC glove rings		99014

PRESSURE TEST KIT

The Mar Mac pressure test kit is designed for periodic air pressure testing of the Commander Series suits. This compact, lightweight kit is completely self contained, requiring no external air supply.

pressure test kit

99017



99017 - pressure test kit

- On/off switch for blower: Blower is engineered to prevent over inflation.
- 6' hose for easy use during inflation
- Magnehelic gauge allows for testing in accordance with ASTM standard
- Electronic digital timer with alarm
- Inflation valve
- Sturdy lockable case

ALUMINIZED OVERCOVER



99023

Aluminized fiberglass overcover for use with Mar Mac Commander Series.

rear entry

99023

front entry

99028

FULLY ENCAPSULATING TRAINING SUITS

Mar Mac training suits offer an economical and effective option for hazmat training.

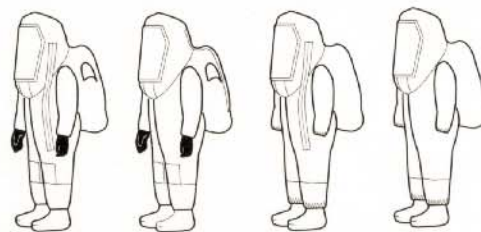
Commander styled training suits are made of durable, 1000 denier Cordura® Nylon fabric. Face shield is removable for laundering.

Economy disposable training suits are made of lightweight, spunbonded fabric.



34135

80110



Training
Suits

FRONT
ENTRY

REAR
ENTRY

FRONT
ENTRY

REAR
ENTRY

Commander

80110

80111

Economy

34135

34635

PERFORMANCE SERIES

Mar Mac's Performance Series offer coveralls, labcoats, shirts, pants and accessories for almost every application. Contact Mar Mac's Customer Service for help in selecting the right performer for your needs.

- meets new ANSI/ISEA 101-1993 sizing standards
- graded sizing through 7XL
- extra roomy underarms and seat area
- full length non-sparking zipper





PERFORMANCE™ SERIES

Mar Mac's Performance Series protective apparel includes coveralls, labcoats, shirt, pants and accessories. Choose from a variety of garments, seam constructions and materials, including DuPont ProtectiveWear® certified garments. All applicable Performance Series apparel are certified compliant to the new ANSI/ISEA 101-1993 sizing standards.

Custom orders: Other styles, colors and seam constructions are available on a custom quote basis.

WARNING

These garments, materials and accessories are *not suitable* for use in some environments and with some chemicals and hazardous agents. It is the user's responsibility to determine the level of risk in a particular environment and the proper personal protective equipment needed. Because conditions of use are out of Mar Mac's control, Mar Mac makes no warranties, expressed or implied, and assumes no liability as to the performance of these products for a particular use.

WARNING

Some materials used in shoe covers and boot covers are *not suitable* for use in environments where there is a risk of slipping and falling. Shoe covers and boot covers are available with a friction enhancement to reduce, but not eliminate, the risk of slipping and falling. Limited use materials are not heat resistant and do not protect against flame or fire. Some of these materials can create static electricity and should not be used around heat, open flame, sparks, or in potentially flammable or explosive environments. Contact Mar Mac or your distributor for additional technical and safety information.



material color/seam



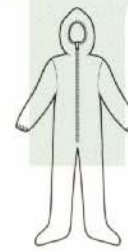
coverall
collar



coverall
elastic hood,
elastic wrist,
boot



coverall
elastic hood,
elastic wrist,
skid-resistant
boot



coverall
elastic respirator
fit hood, elastic
wrist, boot

GENERAL PURPOSE GARMENTS

Tyvek white/sewn	14120	14261	14124 *
FR MarGard blue/sewn	11120	11122	
Polypropylene white/sewn	30120	30122	

CHEMICAL RESISTANT GARMENTS

Tychem 10,000 lime yellow/Thermo Bond	100120 **	100122 **	100124 **
Tychem 9400 yellow/Thermo Bond	94120 **	94122 **	94124 **

Tyvek/Saranex 23-P white/bound	42120 **	42122 **	42124 **
Tyvek QC yellow/bound	37120	37122	37124
Tyvek QC yellow/sewn	35120	35122	35124

* skid resistant boot ** includes storm flap cover over zipper



hood
pullover, chest
length, shoulder
slits, elastic face



hood
pullover, elastic
face, shoulder
length



hood
pullover, polyester
face shield,
shoulder length



hood/vest
pullover, PVC
face shield,
velcro waist belt

material color/seam

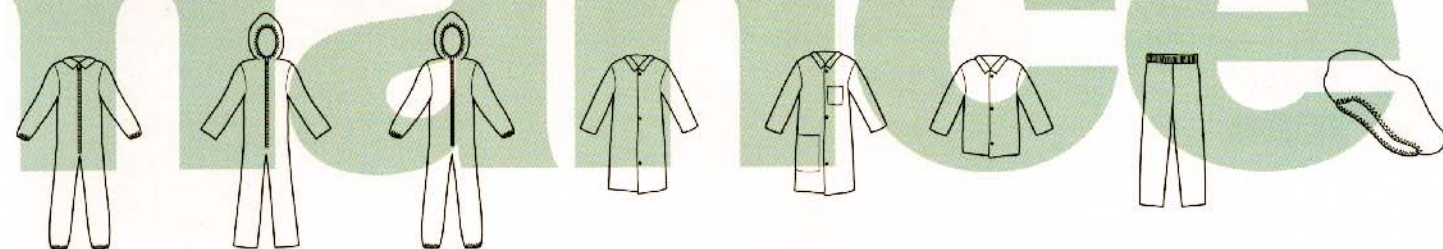
GENERAL PURPOSE GARMENTS

Tyvek white/sewn	14383	14386	14388
Tyvek FC gray/sewn			
FR MarGard blue/sewn		11386	
Polypropylene white/sewn			

CHEMICAL RESISTANT GARMENTS

Tychem 10,000 lime yellow/Thermo Bond			100389
Tychem 9400 yellow/Thermo Bond			94389
Tyvek/Saranex 23-P white/bound		42386	
Tyvek QC yellow/bound		37386	
Tyvek QC yellow/sewn		35386	

manice

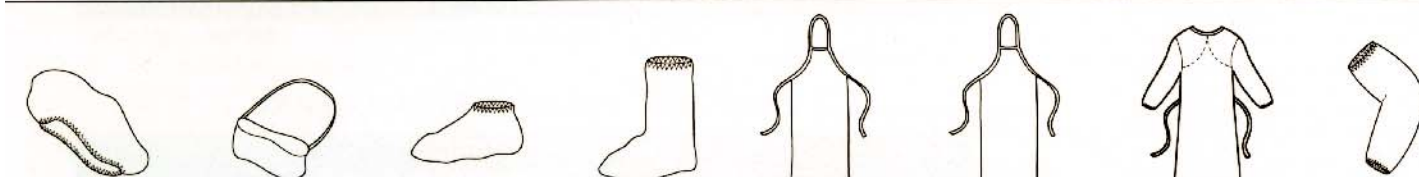


coverall collar, elastic wrist, elastic ankle	coverall elastic hood	coverall elastic hood, elastic wrist, elastic ankle	labcoat snap front	labcoat snap front, left breast pocket, lower right pocket	shirt snap front, long sleeve	pants elastic waist	haircover bouffant 21", elastic headband
---	---------------------------------	---	------------------------------	--	--	-------------------------------	---

14125	14126	14127	14300	14301	14303	14350	14381
11125		11127	11300		11303	11350	
30125		30127	30300				

100125 **		100127 **					
94125 **		94127 **					

42125 **		42127 **					
37125		37127	37300		37303	37350	
35125		35127	35300		35303	35350	



haircover bouffant, light- weight	beard cover elastic headband, elastic neck, lightweight	shoe cover low elastic top	boot cover 17", elastic top	apron bib style, 28"x36"; bound neck & ties	apron bib style, 28"x44"; bound neck & ties	apron 26"x52", attached sleeve, elastic wrist, bound neck & ties	sleeve 18" elastic top and wrist
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		14440	14444	14470	14471	14500	
		12440	12444				
			11444				
29390	29392	30440					

			100444			100472	
			94444			94472	
			42444	42470		42472	42500
			37444	37470		37472	37500
		35440	35444				



sizing

Mar Mac protective apparel meets and/or exceeds the highest industry performance standards. Quality assurance teams thoroughly monitor garment sizing, labeling and workmanship. All applicable garments are certified to meet the ANSI/ISEA 101-1993 sizing standards.

In addition, Dupont Protective-Wear garments offer added value by combining the ANSI/ISEA 101-1993 sizing standards with a series of demanding wearability tests. These wear tests require significantly higher durability as well as proper fit.

WARNING

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WARNING

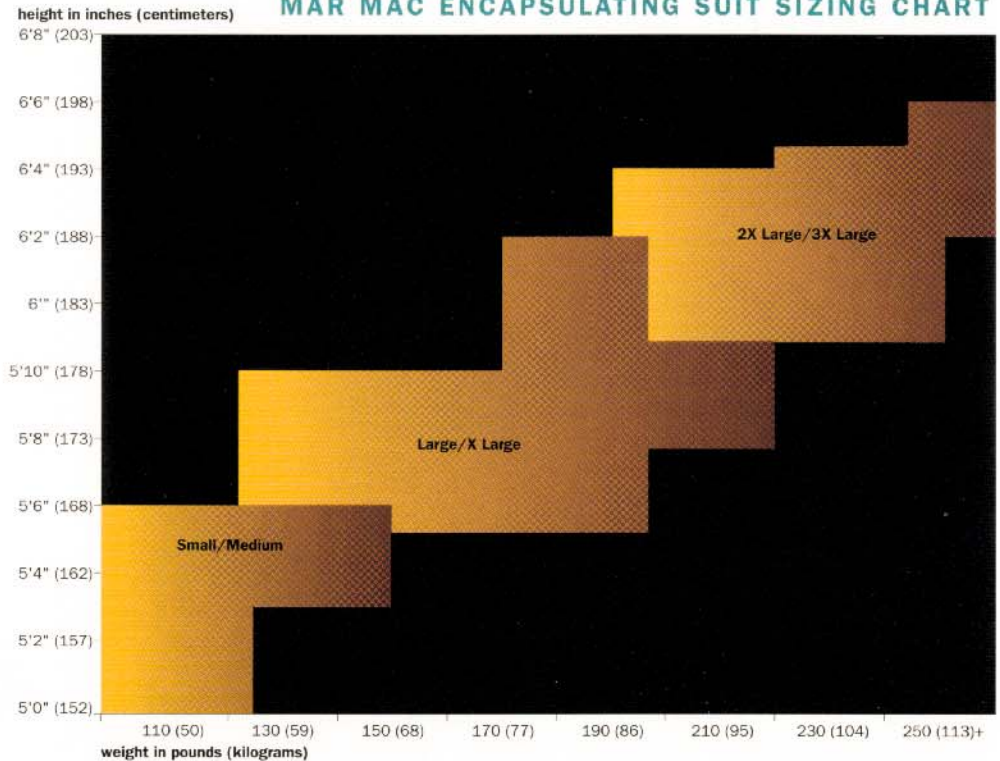
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DANGER

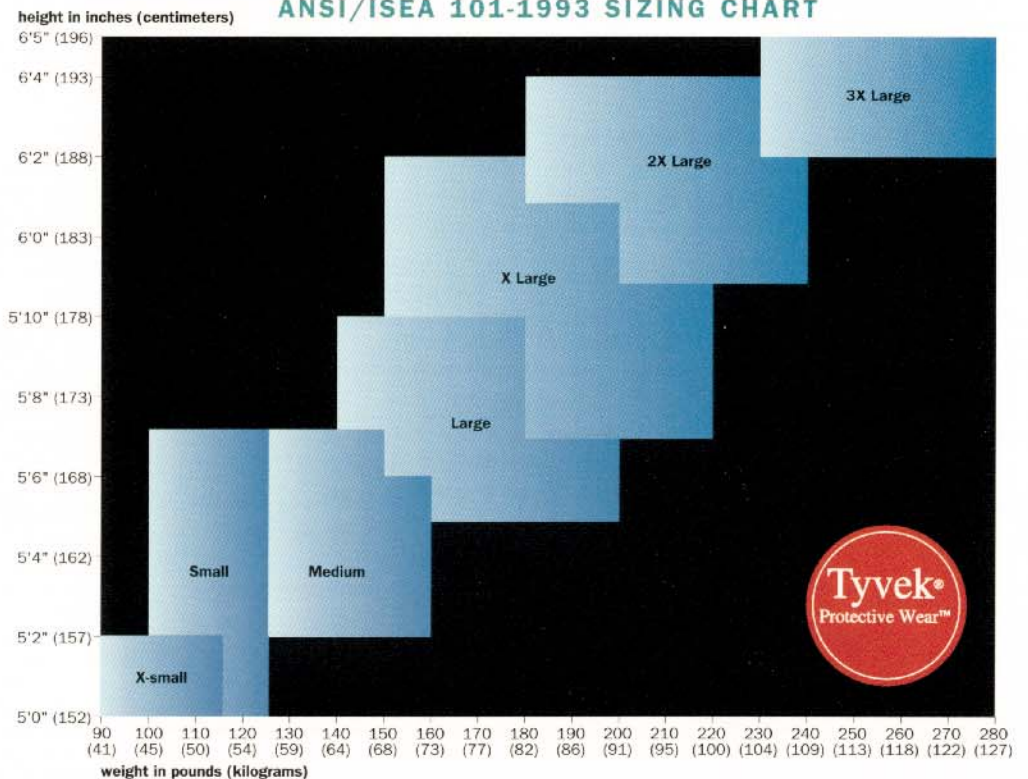
Serious injury and/or death may occur from improper use of these products. It is up to you, the user, together with your employer to evaluate the work environment and determine the safe and appropriate use of these products. Contact Mar Mac or your distributor for additional technical and safety information.



MAR MAC ENCAPSULATING SUIT SIZING CHART



ANSI/ISEA 101-1993 SIZING CHART



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Domestic Preparedness Products

*The danger has
come home.*

It's personal now.



GAS MASKS

MILLENNIUM™ CHEMICAL-BIOLOGICAL MASK

FEATURES

- Flexible polyurethane lens is bonded to the face blank for greater comfort.
- Dual-canister mount accommodates both left- and right-handed wearers.
- Drinking tube provides a safe connection for fluid ingestion.
- Fully elastic, six-point head-harness adjusts easily, speeds donning and doffing, and eliminates hair pulling.
- Internal nosecup with two check valves help prevent fogging by deflecting air away from the eyepiece.
- Standard mechanical speaking diaphragm. Facepiece also easily adapts to the ESP® Communications System from MSA.



DESCRIPTION

The Millennium Chemical-Biological Mask is a Hycar™ version of the reliable MCU-2/P Mask used by the Air Force as well as other U.S. Government entities.

Combining high performance and cost efficiency, the Millennium Mask features a polyurethane one-piece lens and a durable Hycar rubber facepiece.

The standard drinking tube allows for safe hydration in contaminated atmospheres.

APPLICATIONS

The Millennium Chemical-Biological Mask and the Advantage 1000 CBA-RCA Mask are effective against the following chemical warfare (CW) agents: GA, GB (Sarin), GD, VX, Mustard and Lewisite and biological agents. Although not NIOSH-approved for this application, the gas mask and canister have been tested by MSA and independent laboratories and have met the requirements for effectiveness against CW agents using the test protocol recommended by the Chemical Agent Safety and Health Policy Action Committee (CASHPAC). It is also effective against OC (Oleoresin Capsicum) Riot Control Agent and HCN (Hydrogen Cyanide), but has not been tested or approved by NIOSH for these applications.

ADVANTAGE® 1000 CBA-RCA GAS MASK

Chemical-Biological Agent/
Riot-Control Agent

FEATURES

- Super-soft Hycar™ rubber facepiece provides excellent comfort.
- Flexible urethane lens is bonded to the face seal for greater comfort.
- Canister mounts on either side to enable the user to sight a weapon from either shoulder.
- Fully elastic, six-point head-harness adjusts easily, speeds donning and doffing, and eliminates hair pulling.
- Standard nosecup helps to eliminate lens fogging.
- Standard mechanical speaking diaphragm. Facepiece also easily adapts to the ESP Communications System from MSA.



DESCRIPTION

The Advantage 1000 Gas Mask is based on a proven facepiece design developed for the United States Armed Forces. Featuring a clean and simplified design, the Advantage 1000 Respirator weighs up to 40 percent less than conventional full-face respirators. As a result, wearer comfort and user acceptance are both enhanced.

The flexible urethane lens helps the Advantage 1000 Facepiece conform to the wearer's unique facial contours and provides an improved field of vision.

APPROVALS

The mask is approved by NIOSH (National Institute for Occupational Safety and Health) for protection against chloroacetophenone (CN), chlorobenzylidene (CS), P100 particulate efficiency level, and particulates.

NIOSH/MSHA Approval Number TC-14G-0235.

CHEMICAL WARFARE AGENT DETECTION KITS

UC AP2C FLAME PHOTOMETRIC DETECTOR KIT

The UC AP2C Flame Photometric Detector from MSA is designed for quick, reliable detection of chemical warfare (CW) agents down to the parts-per-trillion (ppt) and parts-per-billion (ppb) ranges.



FEATURES

- Portable—weighs less than 2.5 kgs (6.7 pounds)
- Easy to use—instruction label printed on side of instrument
- One-button turn-on
- 10-year shelf life on detector
- Can detect ppt levels of nerve agents and ppb levels of blister agents
- Insensitive to humidity
- Lithium battery requires no charging
- Fast response and clear time
- Conveniently sold as a kit

OPERATION

Principle operation is flame photometry, allowing high sensitivity and precision.

SENSITIVITY

- Toxic agent vapors from
10 $\mu\text{g}/\text{m}^3$ GD
500 $\mu\text{g}/\text{m}^3$ HD
- Response time: less than 2 seconds with
10 $\mu\text{g}/\text{m}^3$ GD
- Return to normal sensitivity: less than 15 seconds with 250 $\mu\text{g}/\text{m}^3$ GD, which is superior to other automatic detection devices

CHEMICAL DETECTION KIT

The Chemical Detection Kit (CDK) is a simple, quick, and reliable means of detecting a variety of nerve and blister agents.

The CDK offers a low-cost, yet high-performance alternative to expensive instrumentation. The CDK can be used to sample the environment in two ways—simply mount it on the gas mask's canister, or use it as a stand-alone unit to sample by diffusion. These sampling techniques save time and eliminate the need to be present in a contaminated area for extended periods of time, as is necessary with other detection technologies.



FEATURES

- Tests nerve and blister agents separately
- Fast response
- No maintenance or calibration
- Economical
- 5-year shelf life
- Results are clearly illustrated and easy to interpret

OPERATION

Detection is performed by colorimetric chemical reaction utilizing chemicals stored in crushable ampoules. Can be used for perimeter or spot-checking.

SENSITIVITY

Normal detection limits are as follows:

Nerve agents (ng/l air)*		Blister agent ($\mu\text{g}/\text{l air}$)**	
GB, GD	2-5	HD	2-4
GA	6-12		
VX	8-15		

*ng = nanogram

l = liter

** μg = microgram

ORDERING INFORMATION

ADVANTAGE® 1000 CBA-RCA GAS MASK

Advantage 1000 CBA-RCA Gas Mask, complete with canister, nosecup and identification tag.

Part No.	Description
----------	-------------

813860	Small
813859	Medium
813861	Large

Riot Control Canister for Advantage 1000

817590	Advantage 1000 Canisters, box of 6
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ACCESSORIES

ESP® Communications System is a self-contained electronic speech projection device. The compact, battery operated unit clearly amplifies and projects the wearer's voice allowing ungarbled speech to be heard even in areas with high ambient noise. See Data Sheet 01-01-21.

Part No.	Description
----------	-------------

805074	ESP Communications System for Advantage 1000 Facepiece (battery not included)
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Lens Outsert

Polycarbonate lens outsert snaps into place over the lens of the Advantage 1000 Facepiece. Outsert provides additional impact protection. Tinted outsert helps conceal identity (only suitable when sufficient light exists).

Part No.	Description
----------	-------------

806463	Small, clear
806462	Medium/Large, clear
806465	Small, tinted
806464	Medium/Large, tinted

MILLENNIUM™ CHEMICAL-BIOLOGICAL MASK

Millennium Chemical-Biological Mask, includes clear outsert assembly.

Part No.	Description
----------	-------------

430344	Small
430343	Medium
430345	Large

UC AP2C FLAME PHOTOMETRIC DETECTOR KIT

Part No.	Description
----------	-------------

10004432	Complete kit with: 1 AP2C instrument 1 Hydrogen storage device 1 AP2C battery 1 Buzzer 1 Technical guide 1 Protective carrying bag
----------	--

CHEMICAL DETECTION KIT

Part No.	Description
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10004433	Complete kit with: 1 case of 4 nerve agent detectors 1 case of 4 blister agent detectors 1 canister adapter 2 carrying straps for cases
----------	---

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NOTE: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.

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